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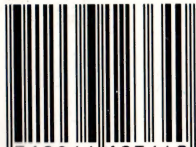
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**A PORTABLE MIXED SIX-PACK**

44

**NEXT MONTH INCLUDES**

Our main feature will be an in-depth look at desktop publishing hardware, from re-writable CD-ROMs for storing images to a variety of scanners and high-end printers and PCs, with interesting application stories to round it out. We'll also cover the latest releases of the full-featured DTP packages, including the long-awaited PageMaker 4 for the PC. With the imminent release of Excel 3.0, we thought this was also the time to bring you a spreadsheet shoot-out: that new release against Quattro Pro 2, Wingz for the PC and Lotus 3.1. This issue will also have an overview of Structured Query Language (SQL) and an update on Dataease, plus the inside story on the 80486 chip and Intel's view of the future.

**This month's cover:** Carry bag from Targas; PC-6200 from Sharp Corporation; BJ-10e from Canon; Wendy McCathie courtesy of Gloria McCathie; concept and photography by Peter Beattie; design by Sally Anne Silveira.



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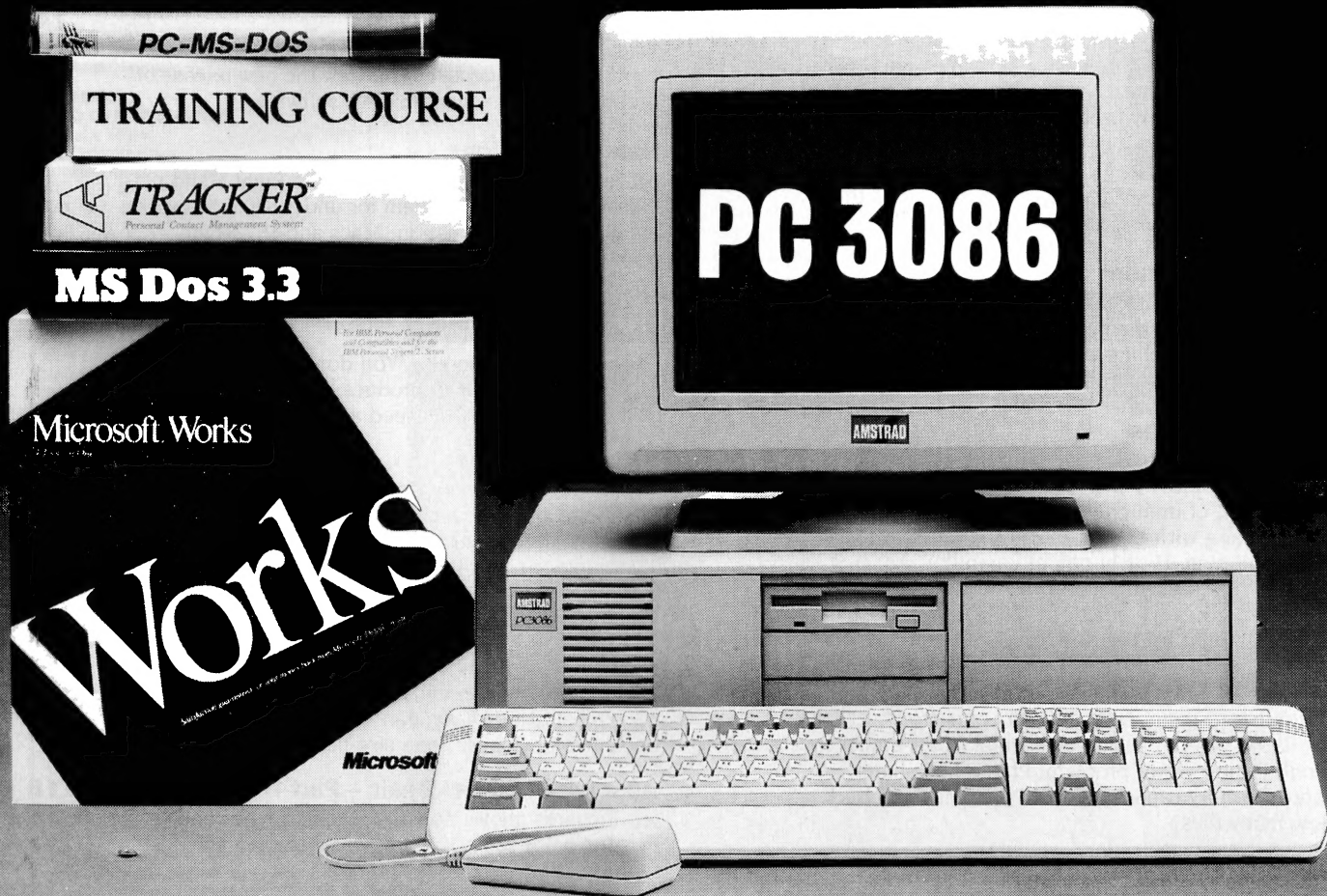
FEBRUARY 1991

<b>Your Computer</b>	<b>7</b>	<b>\$7.50 word processor offer!</b>	<b>64</b>
Coming of age: 'I'm not saying portables are the complete answer, but ... they offer a very real alternative for a very broad spectrum of users.'		Local shareware distributor Manacomm is making a special offer to YC readers: only \$7.50 for the two-disk set of PC Write Lite!	
<b>American Graffiti</b>	<b>8</b>	<b>PC-Instruct</b>	<b>69</b>
The portable office: 'The only thing missing is the fancy water carafe and the executive couch.'		Here's a shell from Tim Hartnell that can be used to develop 21-lesson courses.	
<b>Canberra Comment</b>	<b>12</b>	<b>AutoCad - Release 11</b>	<b>74</b>
Macs on Parliament: 'Using computers to present material on the Parliament, its Members, and Senators, is something which will do much to stimulate learning about our political processes.'		Mark Casey draws on his background in computer-aided design to preview the new release of the world's top-selling PC CAD software.	
<b>Industry Updates</b>	<b>14</b>	<b>New Connections</b>	<b>78</b>
i750 for multimedia; Gartner's hot list; Longer life for batteries; 419Mb 3.5-inch HDD; Fewer pirates, more sales; Flood of immigrants; Twice the bubble jets; Parity pricing with US; Asian Multi-Vendor Alliance; 68040 shipping; Hitachi neural computer; AARNet expands; Risc-based notebooks; Death Knell for computer stores?; Predictions for '95; Stop the bickering! Fight for the desktop ... and more.		BIZTeL fax for WordPerfect; A LAN's Right Hand Man; Australian fax modem for under \$400; Network management specification; Macs and PCs share printer; FrontDoor for PCs; Cellular interface for Pocket Rocket; TurboTerm and TurboComms.	
<b>Tech Tips</b>	<b>22</b>	<b>Your Commodore</b>	<b>88</b>
Motherboard memory; Hard disk connector; Interlaced video; Backing up several PCs; Parallel to serial; Printer driver problem; Phone line sharer; Laptop battery capacity; From PC to Mac and back; How many files?		The price of peripherals: 'You don't need an expensive computer to produce good looking documents, but you do need a good printer.'	
<b>Personal Computer of the Year Awards</b>	<b>26</b>	<b>Release Updates</b>	<b>94</b>
<i>The Winners</i> - and why the choices.		Dick Smith Electronics' Twinhead 590 '386SX; 32-bit graphics; Low-cost, high-end graphics; Portable VGA cards; Magneto-optical storage; Video digitising; 32Mb add-on; Mini UPS; Encryption alternative; CAD Motif; CBT for project management; Trend-y charts; Faster Hardcards ... and more.	
<b>The portable office</b>	<b>32</b>	<b>Windows Wonderland</b>	<b>114</b>
For the mobile executive who needs to be in constant contact with the office, there is only one solution - take the office along.		Making programs modular: 'Marketing pressures have meant that many lean and fast programs have become slow, obese 'one size fits all' monsters.'	
<b>A portable mixed six-pack</b>	<b>44</b>	<b>Assembling QuickBasic - Part 14</b>	<b>118</b>
Mark Cheeseman put six different interpretations of 'portable' through their paces and found combinations to suit anyone on the move.		Jeff Richards shows how user-defined types and floating point can be combined for easy and efficient manipulation of complex numbers.	
<b>Printing on the move</b>	<b>50</b>	<b>Your IBM</b>	<b>120</b>
Printers have shrunk almost in proportion to PCs in the last few years. There are now a number of offerings that fit neatly into a standard briefcase.		Dramatic Grammatik: 'There were also a few times where Grammatik suggested that a phrase be simplified, a sentence was too long or that use of a word was questionable or ambiguous.'	
<b>IBM's Unix strategy</b>	<b>54</b>	<b>Rural Ram</b>	<b>122</b>
'Whither Unix?' according to IBM.		TurboCash+: 'The main difference between TurboCash and TurboCash+ is the inventory and invoicing capabilities of TurboCash+ which are as powerful as most on the market.'	
<b>LANtastic networking</b>	<b>56</b>	<b>Your Amiga</b>	<b>124</b>
'Fantastic LANtastic' we headed our story three years ago on the most straightforward network-er we'd seen. Dan Churchman of LANtastic describes how it's since developed and covers some of the finer points of networking for potential users.		Amiga upgrades: 'In the computer business there's only one recipe for success. Provide the customer with knowledgeable service and competitive prices.'	
		<b>Your Mac</b>	<b>126</b>
		Slightly better than the best: 'Claris appears to have made a very good program, better.'	
		<b>Write Bytes</b>	<b>129</b>
		Missed out? Too sophisticated; Help for students; Small users; Printers; bulletin boards; Commercial reality; Disk subscription.	



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## Coming of age

**T**HIS MONTH'S main features are on 'portable solutions'. I found putting it together something of an eye-opener. For example, I'd tended to think of portable PCs as simply a compromise and hadn't had any real experience with portable printers. However, I've discovered that there is more to the concept of portables than mere portability. Security is a good example – many offices which deal in sensitive 'data' are buying portables because they can easily be locked in the safe when not in use.

Flexibility is another – manufacturers are now offering expansion units or docking stations that add the features of a desktop to all varieties of portables, including notebooks; this gives the user a very efficient two-in-one solution. Then there is cost effectiveness – schools, government departments and even large corporations whose users don't need a PC constantly at their disposal, are buying portables because they are so easy to move from desk to desk and don't occupy much space when not being used; in the case of schools, a trolley loaded with portables which is wheeled between classrooms is now replacing many dedicated computer labs, plus, the students can check the portables out for home use.

In an interview in this issue, Kim Hamilton, Toshiba general manager, makes the point that, soon, desktop computers and portables will merge and every machine will be a 'portable'. A month ago I would have questioned that, but no more.

What really convinced me was those printers. Like most other users, I've bemoaned the size and weight of printers, resenting them while recognising their necessity. Generally, the answer to printing has been a dot-matrix, and by the nature



### February 1984

For years, the popular press has looked upon computers as the tool by which a totalitarian state could be achieved. The fact is that computers are largely irrelevant in this context. Those of us who own computers know how ludicrously simple-minded they are, posing no threat to anyone – **Les Bell, Editorial, p6.**

The 'System User and Management' newsletter reports that Microsoft will soon launch the Microsoft Window with its MS-Dos operating system for personal computers – **News, p8.**

of their mechanics they needed to be big and heavy. Now the latest generation of non-impact, non-laser printers has changed that. Ink jet, bubble jet, thermal – they all offer good quality in a package that is smaller and lighter than this Renard L300 portable I'm using.

Which is another reason I'm on a portable swing. I've shied away from portables in the past, because my work is usually quite keyboard intensive. Even writing a

short piece such as this column left me with wrist ache; I've tried using laptops in my lap but didn't find that wholly satisfactory. But – this machine has a detachable keyboard, with legs even: I've been working on this and another piece for four hours now and am fresh as I would be after using a desktop.

Another discovery I made this month was the Sharp notebook (Mark reviews both of these machines in this issue). I've used it for note taking while reading and during telephone conversations, to read through submissions to the magazine and to write short pieces. It's almost ideal for that sort of work.

I'm not saying portables are the complete answer, but the technology has now matured enough that they offer a very real alternative for a very broad spectrum of users.

### Qume CrystalPrint

THE WINNER OF the Crystalprint page printer was Gabor Cseh who will be putting it to good use in his business as a data processing consultant here in Sydney – Sigma Data offered it as an incentive to respond to November's Reader Survey. I'd like to take this opportunity to thank all 1800 of you for the time you took in responding to the Survey and for your additional comments. We were literally overwhelmed by the replies and are still tabulating them. I know you are as interested in the results as we are, but that story will have to wait for next month – we've run out of time. One rather surprising fact that came out of the offer of a box of floppies from 3M to the first respondents, was how many 3.5-inch drives there are out there: that was the preferred size in almost half the responses. □

### Future Features

IN ADDITION to our application stories, news and other informative pieces, each month we present features designed to keep you informed about the world of personal computing –

**March 1991**

**Desktop publishing hardware** including

scanners and WORM drives and **spread-sheets.**

**April 1991**

**PC add-ons** and **CD-ROM** software and hardware.

**May 1991**

**Mass storage devices** and **Security.**

Application stories – particularly those with the same theme as our features – are always welcome. Material must be received at least eight weeks prior to the month of intended publication. Please address editorial enquiries on our features to Mark Cheeseman, (02) 693 4143, and advertising enquiries to Mark Wilde, (02) 693 6646.





**HOWARD  
KARTEN**

# The portable office

**T**HE 'PORTABLE office' concept that so many vendors are now pushing, really is a wonderful thing. Once you think about it, the idea becomes appallingly obvious: if your job involves processing information in some way, why should you be confined to one specific place? How can anyone possibly justify confining that kind of work to a specific place called 'an office'? Information can exist in many forms, of which the most portable, and easiest to work with, is the electronic form. (In fact, you could probably argue that tying information to one place probably *detracts* from its value.)

Strictly speaking, the idea of the portable office is hardly new. Professionals and business managers/executives have had portable offices for years – typically, squarish, made of leather or plastic, and complete with handles, snaps, pencils, antacids, and one or two other miscellaneous things, such as papers or reports. And even before that, of course, there were what you could call 'portable office instruments', such as hexagonal graphite input devices, cellulose-based data recording media, and so on.

In any case, the portable electronic – and computer and information-oriented – products available today are mind-boggling. Cellular phones, for instance, which you can carry in an attache case; equally small computers; fax boards that fit inside those small computers, and so on – all these make possible the portable office. The only thing missing is the fancy water carafe and the executive couch. The upshot is that the office is anywhere you can find a lap.

For example, telephones are ubiquitous, and travellers don't have to worry that there won't be a phone available when they arrive. (Unless you're going off for a week in the woods, in which case you probably don't *want* a phone around.)

## Is it necessary?

IF COMPUTERS AND terminals become as ubiquitous as telephones, why will anyone need a portable office? As it is, more and more hotels, airline frequent-traveller clubs, and other places are making faxes

and computers available to guests or customers. In the worst case scenario, there will be a machine at your destination, so you will carry everything you need (software, key data, passwords, and so on) on a few disks in your pocket (or even on one of those credit cards with memory embedded). In the best-case scenario, your machine will have software that will let you log in from a remote location and then run your machine as if you were at the keyboard.

Now, if this scenario comes to pass, who's going to need real portability? Indeed, it will be not only refreshing, but perhaps necessary as well, to do something to keep your hands *off* the keyboard while you're en route, so you'll have a chance to step back and do some pondering!

---

*Instead of trying to  
mooch cigarettes, will  
people try to mooch spare  
batteries?*

---

The ubiquity of computers and email has led to an interesting development regarding politeness. I am told that in one well-known corporation, it is becoming commonplace for a host to offer a visitor from another part of the company (that is, a fellow employee) the use of the host's terminal, so the guest can check his email. Especially savvy etiquette, I am told, is for the host to discreetly step out, to give the visitor some privacy, and perhaps return with coffee.

It's bad enough that computers have made it necessary to do so much education and re-education of the labour force. Will portable computers mean that people have to learn new forms of etiquette as well? Instead of trying to mooch cigarettes, will people try to mooch spare batteries? 'Say, buddy, could you spare a battery?' Unless the populace is prepared to learn new forms of etiquette, this port-

able stuff could be in for some serious indirect resistance.

## Status

ONE ASPECT OF the human condition that may short-circuit 'portable office' products has to do with the interminable human drive for status and recognition. Human beings are built such that normal models with no defects commonly like to feel special and unique.

This means that for as long as portables are expensive, they will be desirable and a status symbol. After all, if your employer or your boss did not hold you in high esteem, would you be given a portable? Would you give a 'portable office' to someone whose time and abilities you did *not* value?

Ah, but what happens when they become inexpensive? The model here is beepers. Once upon a time, a beeper advertised your status. Carrying one said that your expertise was so highly valued that 'they' felt they had to be able to find you instantly. It was not uncommon for those who did not really need one to carry one anyway, to advertise their importance.

So, as 'the portable office' comes down in price – as it inevitably must – expect it to go from being a symbol of high-status work, to one of low-status work. If everyone has one, who's going to want one? If there will be one at your destination, who will need one?

Another aspect of this problem has elements of status as well as territoriality. The things in an office tell the world how important you are; it's not unlike the insignia that military personnel wear on their sleeves the world over. (In the US, many organisations such as banks have very precise guidelines indicating how much 'trappings' your rank entitles you to, such as the number of square feet you get, how much artwork on the walls, whether you get wood or metal furniture, and so on.) The Japanese signal status in part by how they bow on meeting others, while Westerners are more likely to do it with physical objects. In any case, if your whole office is truly portable, how are you going to signal to others how important you are? □





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# Macs on Parliament

EVERYDAY IN Canberra hundreds of visitors stroll through Parliament House. In a way it is curiosity that brings them so far to see the place featured nightly on the TV news shows. Many of the visitors are school students brought by teachers on an educational pilgrimage to the centre of democratic power in Australia.

The Parliamentary Education Office helps visitors find out about our Parliament by holding seminars and conducting students around the working parliament. They now use computers to assist with the task of telling students all about our Federal MPs. Because most schools have at least one Apple Macintosh machine, the parliamentary education office has chosen to release a computer database suitable for Apple Macs.

---

*Using computers to present material on the Parliament, its Members, and Senators, is something which will do much to stimulate learning about our political processes.*

---

Also incorporated in the package is information from the *Parliament Stack*, a large Yearbook about MPs and their electorates.

The President of the Senate, Kerry Sibraa, and Ron Edwards, the acting Speaker of the House of Representatives, recently watched the software package being tried out for six visiting students from Orbost Senior College in Victoria.

After watching the trial, Edwards, a former school teacher and CAE lecturer, said that curriculum packages such as the Parliament Stack would do much to break

down the problem of distance which often works against students seeing their Parliament in action. 'The Parliament Stack can be sent to schools in remote locations and students will then have an up-to-date idea of the work of Parliament, its committees and the type of person who takes up a position as an elected Member or Senator,' Edwards said.

Senator Sibraa said that the initiative would bring the Parliament closer to the people, particularly young Australians studying a range of subjects in schools. 'Using computers to present material on the Parliament, its Members, and Senators, is something which will do much to stimulate learning about our political processes,' Senator Sibraa added.

The program was designed using HyperCard, allowing access to data about the Parliament through icon driven menus. Two of the icons designed for the program are based on the tip of the Black Rod from the Senate and the top of the Mace from the House of Representatives. The database includes the 1987 and 1990 Federal election results plus statistics about each electorate such as average age and income from the last Census [1986]. Also in-

cluded is a summary of all Federal election results since 1949. Biographical details about individual members are displayed together with a scanned photograph.

The search facility gives a user three search paths – zooming in on a map of Australia, using a locality such as a suburb name or postcode.

The regular school package runs in black and white while a public display version in Parliament House runs in colour on Mac IICIs. The public display version works with a trackball instead of a mouse.

Richard Gilbert, director of the parliamentary education office, says that following the trials in schools and other educational institutions the package will soon be available to the public. The program needs a hard disk to run effectively because it will be sold as a 5 disk set.

The Parliamentary Stack program was designed by James Steele and David Arnold.

### Bounty for the New Year

THE GOVERNMENT'S computer bounty is continuing this year with a reduced rate applying after June. The minister for tech-



*David Arnold, one of the developers of The Parliament Stack, an educational tool for students and Parliamentary visitors, with students from Orbost Senior College, Victoria.*



nology, industry and commerce, Senator Button, announced last year that the bounty would continue to fall until December 1995 when it will be set at nine per cent.

The bounty is paid to eligible producers of computer equipment, mainly applying to microprocessors, computer sub-assemblies, modems and circuit boards. Bounties are traditionally used to support price competition with imported products while at the same time keeping costs for buyers at reasonable levels. Assuming the present Federal Government is still in office in 1994, there will be a review of bounty levels to apply after 1995. Last year the bounty cost the taxpayers \$42.9 million.

### Research goals

THE AUSTRALIAN science and technology council recently held a one day seminar in Canberra to discuss the latest report with the Prime Minister about setting directions for Australian research. The issue is no longer simply how much cash we should throw into research projects, instead, the report asks questions about where our research dollars are being spent. There is also some serious discussion about Australia having long term research goals.

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*There is an old joke about  
a consultant being  
someone who borrows  
your watch to tell you  
the time.*

---

Australia's spending on research is frugal when compared to other countries such as Sweden and Japan. The way our young scientists are treated, even now after so much publicity about paying for research quality, is depressing. As a personal example, a friend's son is working as part of a team researching cancer and they are making astounding progress. So much so that they may well beat the rest of the world in finding the key to cancer cells. This young man is being paid at about the rate for a builder's labourer. He could walk into a job in the US tomorrow for five or six times his present salary plus a research budget he could only dream

about in Australia. He still keeps turning up for work here – Australians are funny that way.

We spend around 1 per cent of our national income on research – last financial year that was \$1200 million for government agencies. Private research makes up the balance. Japan spends nearly three times more as a percentage of its national income on research – last year that was more than 10 billion dollars. Of course that comparison is not quite fair because Japan has eight times Australia's population. Also cynics would add that the country has no natural resources and at the end of the Second World War was a devastated loser.

A more logical comparison might take in Sweden which was the main discussion point at the ASTEC seminars. Sweden has about half the population of Australia with a third more national income per head. The Swedes spend more than twice as much on research as Australia. In addition, the Swedes have a plan on how to spend their research money more effectively.

More and better planned Australian research ultimately means more business for the computer industry here. Most research programs rely on computing at some stage. My friend's son doing the cancer research cannot do without his Macintosh, for example.

### Consultants alive and well

MENTIONING THE WORD 'consultant' around Canberra often brings a knowing smile to the lips of those who have been exposed. There is an old joke about a consultant being someone who borrows your watch to tell you the time. All jokes aside, some consultants are called on to perform unusual tasks.

Here is a sample from the Department of Industry and Commerce's annual report: Comfax International received \$48,000 to write a report 'detailing Australia's industrial spending in regard to the development of satellite communications systems'. Trippett, Sheldon Pty Ltd was paid \$91,000 to 'provide an industrial capability stocktake identifying and categorising the Australian industry in terms of current and potential space related skills, capabilities and activities. Tony Carr & Associates received \$53,000 to 'develop a Vendor Qualification Scheme awareness program'.

Altogether the department used 129 consultants last year, paying them a total of \$4,110,434. □

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# INDUSTRY UPDATES



## Gartner's hot list

THE GARTNER GROUP, a US consulting and research group, says that over the next five years, major changes will take place within the computer and telecommunications industries. The revelations include a predication that the US information systems industry, slowing to a 7 per cent growth rate after several years of growth at up to 20 per cent, will climb back in mid-decade if vendors solve connectivity problems, indigestion (improper assimilation of existing systems), and create new technological drivers.

The Gartner Group forecasts that the hot products of the decade will be palm-top computers, wireless phones, image management, object-oriented programming, speech recognition, Risc and parallel processors, optical disks and fibre optics. Worldwide micro, mini and mainframe computers will grow from about US\$300 billion this year to almost US\$700 billion by the year 2000, the company predicts. Further, the gap between micros, workstations and mainframes will widen 24 per cent each year over the next ten years, resulting in 700 more MIPS for each US\$1 spent on microcomputers vs. mainframes by the year 2000.

The Gartner Group says the under-US\$25,000 unit price market share will grow from 45 per cent in 1990 to 52 per cent in 1995 and to 57 per cent by 2000. In the operating system

arena, the company predicts that those which are 'open' in the Dos, OS/2 and Unix arenas will be purchased for 60 per cent of total systems by 2000, up from about 45 per cent now. The big winner of the '90s, it predicts, will be Fujitsu/ICL, which will second-best IBM and strengthen its grip on the number-two spot in the worldwide data processing industry as it increases its market share two-thirds by 2000. □

## 419Mb 3.5-inch HDD

HITACHI IS NOW offering OEMs (original equipment manufacturers) its 419Mb 3.5-inch HDD (hard disk drive). The new drive, DK314C-41, has a 1.7 times larger storage capacity than its predecessor by incorporating a high-density storage technology and fast, high-precision data access mechanism. The drive adopts the industry standard interface, SCSI (Small Computer System Interface) and its average seek time is 16.8 milliseconds. The sample price is 480,000 yen (\$4500). The drive shipped in late January. Hitachi expects to

sell 200,000 units to workstations and personal computer makers over the next four years. □

## Arche closes

THE AUSTRALIAN subsidiary of Arche Technology has closed after posting a \$1.6M loss. The move comes after only 19 months of operation in Australia, and only one week after the announcement of the company's new 80386SX-based notebook computer. Losses are blamed on 'mistakes' made during the first year of operation.

Peter Connelly, Arche's managing director for the Australian subsidiary, who was brought over from the successful New Zealand subsidiary, said that 'there is nothing wrong with the machines, but they were presented to the dealers in the wrong way'. Another mistake made was the selling of machines with an NCR warranty when no agreement had been made with NCR.

The decision was made by Arche Technologies' share-

holders, and came about due to the high operation costs and the lack of success of the products in the Australian market. The move will not mean Arche will not consider appointing a distributor in the future, or reopening a subsidiary here, according to Connelly. □

## Sister for Brief

FOR SOME YEARS, Brief (and sister product dBrief for dBASE language programmers) has been the most popular programmer's editor. Now, Solution Systems has added a sister product called Sourcerer's Apprentice which manages a programmer's code



## Fewer pirates, more sales

THE BUSINESS SOFTWARE Association of Australia (BSAA) has claimed its year-long offensive against software piracy is working, and the major software companies, including WordPerfect, say their sales are rocketing. The five software giants in the BSAA agreed that the campaign had helped to reduce software copying and had led to a sales boom.

WordPerfect's Pacific Regional Director, Doug Ruttan, attributed a 160 per cent growth in sales to the BSAA's anti-software copying offensive, which he believes has educated people. Lotus' corporate services director, Len Cain, confirmed that high software sales were due to the effectiveness of the BSAA strategy. Despite the drop in illegal copies, however, Cain said figures from research company International Data Corp still showed that 50 per cent of all Lotus 1-2-3 applications used in Australia had been illegally copied. Microsoft, Ashton-Tate and Autodesk, the other member corporations of the BSAA, also reported increases in sales they attribute to the Association's action over the last year.

BSAA consultant Justin Poulos said the organisation ran close to 30 seminars on unlawful software copying. It also put out a compliance manual that outlined what copying and piracy is, how it occurs and set out the penalties involved. BSAA also embarked on an extensive publicity campaign to help raise awareness. □

*Chairman and co-founder of Microsoft, Bill Gates, is visiting Australia, February 3 to 5, to talk at the Microsoft-hosted 'Information at your Fingertips' conferences on February 5, delivering the keynote address. According to Microsoft Australia, he will provide local pundits with a glimpse of the 'Microsoft vision of future technologies, standards, and applications as the PC industry continues its growth as the new mainstream sector of the computer industry'. The speech is expected to follow the line of Gates' keynote speech at Comdex Fall '90 (see the item, 'Fight for the Desktop').*



development. Sourcerer's Apprentice takes over the job of keeping track of the development life of code by remembering where and how code has been updated, keeping an audit trail, monitoring divergent paths, allowing recovery of earlier versions, and forcing documentation and revision notation with each modification.

Brief was recently bought by Solutions Systems which says it will concentrate on developing a family of integrated products which can be used together or separately, yet still maintain a common user interface.

For more information, contact Software Express, (03) 663 6580 or (02) 519 3155. □

## Parity pricing with US

AUSTRALIAN MACINTOSH products distributor Reliable Australian Distributors (RAD) has thrown down the gauntlet to other Australian PC distributors saying 'it is possible to avoid the mark-ups associated with imported products'. Traditionally, Australian users expect to pay around 60 per cent more for products sourced overseas, compared to the prices those products cost in the source countries.

For example, a word processor selling for US\$200 in the US would usually retail for around \$400. RAD's managing director, Ross Aubrey, says his company plans to deliver products at parity pricing or even better than US prices. New products in the RAD list include the UnMouse (AUS\$374), the Smart Bundle (US\$455 – consisting of WriteNow, Full Impact, SuperPaint and Record Holder Plus) and the Classic Mac Starter Pack (US\$1465 – including a 40Mb Microtech Nova hard disk, 3Mb of RAM, Norton Utilities and other software).

Recently, Microsoft Australia decreed that it will achieve parity pricing within the next year or so. Some subdistributors, however, say that they or their purchasers are being forced to fill the shortfall rather than Microsoft. 'We're the ones who have to pay for the popularity of Microsoft products, not Microsoft,' said Verilyn Smith, MD of Merisel in Australia. □

## Amkly distributor

MICROAUSTRALIA, A subsidiary of Merisel, has signed an agreement with Amkly Systems to distribute that company's range of memory expansion products for Compaq Computers. Barry Clancey, MicroAustralia's national product director, said that 'MicroAustralia was looking for a suitable line of memory expansion products to compliment our current line for Compaq Computers. Amkly Systems 'fitted the bill' perfectly.'

Amkly currently markets the AMPac product line, which includes memory expansion boards that plug directly into Compaq's dedicated memory slot and memory modules that can enhance or upgrade certain Compaq memory and systems boards. Amkly also has a range of SIMMs for use by enhancement board manufacturers, including IBM and Compaq. Industry standard SIMMs for Apple, AST, Epson, IBM, NCR, and Zenith systems are also manufactured by Amkly. □

## 68040 shipping

MOTOROLA'S MICROPROCESSOR and Memory Technologies Group has announced the initial volume shipments of the production version 68040 microprocessor. A total of 36 companies including Apple, Hewlett-Packard/Apollo, NCR, NeXT, and Unisys have announced intentions to use the

## Stop the bickering!

ONE OF THE MOST astonishing aspects of life in the US to an outside observer is the apparent willingness of individuals and companies to indulge in litigation at the drop of a hat. Nowhere is this more true than in the information technology industry. All too often the disputes appear quite frivolous, if not actually mischievous, to the overseas audience. The impression one gets is that those involved are unable to distinguish between real life and some potboiling television soap opera.

The only real beneficiaries of this over-willingness to take petty squabbles to court are the lawyers, and the ill-effects are frequently felt far and wide. The companies resorting to absurd litigation would do much better to invest the vast sums of money involved in producing better, and better documented, products. There is not a single IT company that does not have room for improvement in its support of the person who ultimately foots every bill – the end user.

At a time when strenuous efforts are being made to establish industry-wide open standards for operations and communications, we are faced with the ridiculous prospect of companies such as Lotus, Apple and others, attempting to prevent the establishment of aspects of their own products as universal standards.

Surely, the prestige and other benefits to be gained from having produced a user interface that others wish to emulate greatly outweigh the shortsighted desire to make it exclusive? Companies that do not recognise the advantages of being a de facto standard setter in a world where everybody else is striving to achieve such standards, will inevitably find themselves following the dinosaurs into oblivion before long.

You do not have to know what is under the bonnet to be able to drive your car, but it is essential for you to be expert with the controls. If it was necessary to learn to use a different law-protected control system every time you got into the driving seat of a different make of car, the motor industry by now would have been long extinct.

Open Systems Interconnect (OSI), the Open Software Foundation, Electronic Document Interchange (EDI) and other bodies or schemes are the result of efforts by untold thousands of people working for many companies large and small, themselves working cooperatively to the universal good.

So when will silly, parochial, selfish and ultimately doomed obstructive tactics, which only serve to threaten the well-being of an entire industry, be abandoned in favour of simple common sense?

– Norman Wingrove

68040 microprocessor in future products.

The 68040 embodies a complete redesign of the 68000 architecture enabling it to deliver what the company says is from three to 10 times the performance of its 68030 predecessor, yet the 68040 is fully compatible with all members of the

68000 family. It is rated at 20 MIPS (million instructions per second) and 3.5 MFLOPS (mil-

*'Industry Updates' is provided by Newsbytes, the world's largest independent network of computer journalists.*



## Fight for the desktop

MICROSOFT CHAIRMAN Bill Gates' vision of the future, expressed in his Fall Comdex keynote address, is that the fight over operating systems will go away. The annual Comdex 'crystal ball' session, held one hour after Gates finished his talk, drew so many people to argue the merits of MS-Dos, OS/2, Unix, and the Macintosh operating system that half the audience had to go into another room and have the fight piped in over loudspeakers.

They weren't disappointed. Moderator Will Zachmann, president of Canopus Research, Duxbury, MA, set the tone by wearing what he called 'Terminator glasses,' dark shades which he donned when anyone started rambling or making speeches. Top executives from IBM, Compaq, Microsoft, Apple, Quarterdeck (makers of DesqView) and the Santa Cruz Operation (SCO) didn't disappoint. The speakers were unanimous in their praise for standards and interoperability, but all demanded allegiance to their views on what this means. 'I think you'll see 20 flavours of every technology you ever thought about or read about, but as you sort through them, look for an industry standard,' said Michael Swavely, president-North America for Compaq. Swavely emphasised relationships, mainly through Compaq, as the way to sort through the maze.

Steven Ballmer, senior vice president, systems software for Microsoft, tried to direct the panel to Gates' vision. 'The PC has to become more personal, or industry growth will continue to slow. We have to provide architectures, and applications, which integrate seamlessly. We need to provide systems which let information be shared, and we need to provide richer types of information. Finally, we have to extend our concept of networking, so you can really put together enterprise networks which let you access all this.'

Leland Reising, vice president-programming for IBM, agreed with Ballmer. 'We need tools to build these solutions,' he said. 'Fundamentals are standards in this industry.' Eric Hippeau, executive vice president for Ziff-Davis Publishing, called Ballmer's views a pipedream in today's world.

Therese Myers, president of Quarterdeck Systems, agreed with Hippeau, and pointed to her own company as an example. 'There will be mixed solutions in every company,' she said. 'Even our own advertising people want Apples. That means you have to figure out how to intermix hardware and software platforms, so people can work together.'

Doug Michels, executive vice president for the SCO, said this need to protect the existing infrastructure will lead users to the triumph of Unix. 'Users have to protect their investments. They can't use platforms that won't grow. There's a coming realisation that the way to do this is built around open systems. It allows portability to existing and future platforms.'

Zachmann's view of the future provided the biggest hand of the session. 'Mainframes and minis are being replaced by microprocessor-based solutions. We're the little mammals feeding on the carcasses of these dancers. The most crucial issue is who wins on the desktop? The logical path is we move to Windows, then OS/2. But if that Main Line doesn't work, then Unix will eat their lunch - it's clearly going to be the dominant operating system on multi-user systems.'

lion floating point operations per second) at 25MHz and thus offers what is said to be the highest throughput of any mainstream processor, performing up to 14 operations at the same time. □

quickly store huge quantities of information and come up with an optimised solution almost instantaneously.' □

## Low-priced Ada

IN A MOVE TO CAPTURE a large portion of the Ada language market, Meridian Software has started shipping a US\$149 Ada development system. Ada is the language developed by the Pentagon as a new standard language to replace COBOL (the last language adopted as a US military standard). Ada compiler and development systems are normally priced in the thousands or tens of thousands of dollars, making it difficult for independent programmers and small businesses to become familiar with this powerful general purpose computer language, but Meridian's new AdaZ compiler, linker, debugger, optimiser, windowed code editor, and library is a fully validated Ada system.

All Ada compilers and development systems must meet stringent test requirements conducted by military contractors before they can use the name Ada, which was given to the language to honour Ada Lovelace, Lord Byron's daughter, who is thought by many to be the first computer programmer because of the ideas she gave Charles Babbage. Meridian has been selling more expensive Ada compilers for years and has eliminated both a more expensive development system and a student version by bringing out this more powerful low-priced version.

Newsbytes copy of AdaZ came on ten 360K 5.25-inch disks and was accompanied by a moderate amount of documentation, although the package did not include an Ada language tutor. Ada is a powerful full-featured language and is intended for professional pro-

## Hitachi neural computer

HITACHI HAS announced the development of a general-purpose neural computer with learning circuits that can carry out up to 2.3 billion operations per second. Hitachi's announcement states that the new system has the highest learning performance ever achieved by such a computer. It includes 1152 neurons and measures 4.7 x 3.3 x 3.5cm.

Hitachi have also developed stock price prediction and signature verification applications which can be run on a workstation linked with the neural system. A stock price prediction has been timed at 10 seconds while signature verification took 2 seconds.

In describing the differences between standard digital computers and neural systems, the announcement stated: 'A neural computer is an information processing system which uses a neural network modelled on the human brain. The Neumann-type computers in common use today can handle problems amenable to numerical, comparative, and other types of logical processing at very high speeds. These systems, however, are dawdlers when it comes to tasks that require intuition, such as optimisation and pattern recognition. On the other hand, the neural computer - like the human brain that it imitates - is poor at numerical calculations, but adept at solving problems that involve optimisation. Another feature that sets the neural computer apart is its ability to learn. Like the human brain, the neural computer can



grammers, especially those wishing to create embedded real-time systems such as for military use.

Since Ada is now the standard language as specified by the US Department of Defence and because it was specifically designed to allow reuse of previously created code, Ada is thought by some observers to be a good candidate to become a major programming language in both government and business, despite the fact that it lacks specific support for currency operations.

For further information, contact Meridian Software Systems, 10 Pasteur St, Irvine, CA 92718, USA; phone 00111 800 221 2522. □

## \$200,000 suite

THE MARKET FOR \$200,000 accounting packages may not have the high volumes generally enjoyed by PC products, but at that price it's quality of customer that counts. Australian software manufacturer CSP has developed Prophecy under the Ingres database environment, and has aimed it at traditional customers of the Oracle financial system – companies with annual turnover in the tens of millions of dollars.

Prophecy consists of a complete suite of modules for payroll, personnel and management accounting and is designed for modern client/multi-server environments such as Unix on Sun, Sequent, Prime and Unisys computers. It is the result of a 30 man-year project, and the Ingres fourth generation database allows each version to be customised to the user's needs. It has been bought by a number of Australian and international companies, and CSP is now negotiating with potential distributors in the US and Europe.

Other functions include:

general ledger; accounts payable; accounts receivable; order entry; purchasing; inventory; project costing; and assets. It is expected that country-specific versions will be created for local accounting practices, tax laws and so on.

CSP can be contacted on (02) 412 6344. □

## Twice the bubble jets

CANON WILL DOUBLE production of bubble jet printers to a monthly 200,000 units by March of next year, according to a report in *Business & Technology*, a Japanese daily newspaper. Due to favourable sales of its BJ-10V, called BJ-10E in Australia, a printer aimed at the notebook computer market, the company cannot meet demand though it currently produces 30,000 units for the Japanese market and 50,000 to 70,000 units for the overseas markets each month, the paper reports.

The bubble jet printer is Canon's original ink jet printer. Canon promises high quality and high speed printing with low noise and high reliability. As the printer is priced much lower than a laser printer, Canon has positioned it as a 'next-generation printer' to replace dot matrix printers. In January, it released BJ-330J and -300J, high-speed models with a maximum printing speed of 300 characters per second, targeted at office users. □

## Windows player for FLI

AUTODESK HAS announced plans to make FLI files produced by its 2D and 3D animation programs accessible under multimedia extensions to the Microsoft Windows graphical environment. The company is currently developing a Windows player that will allow FLI animation files created in Autodesk Animator or Autodesk



*Brisbane computer graphics specialist, Delta Technology, has been chosen by Sun Microsystems to work on a Partnership for Development project. The Partnership program is an agreement by multinational firms to enter into 'partnerships' with local firms on specific projects to develop products and services which can be marketed overseas. The two companies are to work on an interface between Sun SparcStations and Canon colour laser copiers and bubblejet printers, which will enable colour images and text to be output through the printers at high resolution in continuous tone colour. Pictured discussing the project are Delta Technology's publishing specialist, Chris Evans, (left) and Sun's Queensland manager, Neil Godyer.*

3D Studio to be played back in windows under Windows 3.0. The Autodesk player is implemented as a Dynamic Link Library so it can be accessed by other Windows applications including multimedia authoring tools.

Player will allow the simultaneous playback of digitised sound and FLI animation allowing '286 computers without large amounts of RAM to be used in multimedia applications. The player should be available to qualified developers early this year. □

## Classic embarrassment

DESPITE ROUND-THE-CLOCK shifts in the Singapore manufacturing facility, Apple has found itself unable to meet demand for the Mac Classic in most markets. Australian dealers have been told that they are being allocated stock on the

same basis as US dealers, and as a result will have to wait as long as them until supply meets demand.

Apple Australia spokesperson Emilio Robles told Newsbytes that his company is sourcing product from both the Singapore and Fremont factories, and has already placed large orders for the new LC model, expected early next year. 'We had an excellent campaign in August and that gave us record sales, but the new machines have even outstripped those records. And the IDC market data shows that we're not cannibalising our own market for the new Classic, but we've taken market share from the budget PC area.'

Asked if Apple Australia would follow IBM and other vendors in appointing low-end retail dealers he said: 'We were there back in the early '80s with the Apple II and we'll never go back there again. Our users need the support that they can never get from rock-bottom discounters. They want



## Death knell for computer stores?

COMDEX STANDS FOR Computer Dealers Expo. Perhaps one of the big stories of last November's Comdex is the admission, by some, that the dealer channel, as it's existed for a decade, may be dying off. Robert Puette, president of Apple Computer US, runs a company which depends on the dealer channel. 'There's a big change in the customers.' Most now know what they want, and buy on price, defining service as the willingness of a store to take the goods back and make things right. We need dealers to focus on first time buyers, but we also need a more cost-effective distributor who can support knowledgeable buyers,' Puette added.

Added Eric Hippeau, executive vice president of Ziff-Davis Publishing, 'I'm buying direct more and more. It's a big trend. I'm tired of going into dealers who can't fix my problem.'

These concerns were addressed directly in a session called the Darwinian Evolution of the Dealer Channel, hosted by Seymour Merrin, president of Merrin Information Services, Palo Alto, CA. He set the tone for his session by showing charts demonstrating how stores are going into bankruptcy as profit margins shrink. 'You either have to be extremely efficient, add a lot of value, or fall into the bankruptcy gap,' he said, as an audience of about 200 computer dealers nodded grimly.

All three of Merrin's panelists then described what they're doing to become more efficient. Ed Anderson, president of ComputerLand US, described in detail how his new, efficient warehouse in Indianapolis, IN, is able to deliver complete, fully-tested systems within a few days of getting an order, and how an electronic invoicing system will one day link corporate customers on the one hand with ComputerLand vendors on the other, with the store existing only as an intermediary. 'Our goals are to go from being convenience stores to being depots,' he said, comparing his system to that of Federal Express or American Airlines. 'American Airlines makes more money with its systems than with its airplanes.' But his last statement should have put a lump in the throat of every ComputerLand franchisee.

'It's my belief, the industry has such a compelling case that marketing isn't the central issue.'

Anderson's opening was music to the ears of Nathan Morton, president of the Soft Warehouse chain of computer superstores, based in Dallas, Texas. He discussed how his stores really do just what the customers ask. 'We were founded in 1984 as two men in an office selling software over the telephone. When our customers asked for better software, we got it. Then they asked for hardware, and for systems. Then they asked to come down and pick the products up, so we put in a cash register and opened the front doors.'

'My point is we're nothing more than what customers want. Customers want what they get with the rest of the retail industry. They want value, selection, and customer service. They want service and support. They want to speak with people who can help them find the most cost-effective solution. They want technical support that's appropriate for their use. Customers want to believe in the retailer they're buying from. The manufacturer isn't important - a relationship with the company selling the product is critical.'

Morton concluded, 'We want to be the Toys R Us of the computer industry, the Home Depot, the Circuit City. We want to do that nationally, consistently, and profitably.' The average Soft Warehouse store draws 10,000 customers a week, and there are now 14 of them.

Bob Neighbors, president of the technology division for Electronic Data Systems, the computer division of General Motors, showed a chart on his view of computing's future, one dominated by EDS at every level except retailing, where he admitted Morton has an edge. 'We're a high end system integrator,' he explained, growing 18 to 20 per cent by taking total control of computing for the Fortune 1000. Our recommendation to vendors is to talk closely to system integrators, and align yourself closely with them. That's the greatest growth opportunity in the near term.' In the long term, neither Neighbors, Morton, Anderson or Merrin made any promises.

to go back in six months and find the same staff, and get good answers to their questions which will be a lot more technical by then.' □

## Computer Pals

A COMMUNICATIONS network originally started in 1983 by connecting two schools in Australia and Alaska is now providing disabled students with links around the world. Computer Pals Across the World

(formerly known as The Australaskan Writing Project) has around 12,000 educational users around the world, and has now turned its attention to servicing the needs of disabled students.

The students access the system from the Independent Centre, which is part of the Spastic Centre of New South Wales (NSW). Students compose letters using either a Touch Talker or a Light Talker (input devices), and these are then transmitted to overseas Pals via OTC Dialcom. The Touch Talker utilises a pointing device to allow students to se-

lect words to include in letters, while the Light Talker lets students point at individual letters with an infra-red pen. Once entered, the letters are imported into Apple Works on an Apple IIGS, which allows spell checking to be carried out.

The Centre relies on donations for the bulk of its equipment, with some of the computers being purchased by the Centre. The remaining computers are donated by charity groups, with modems donated by Netcomm, OTC Dialcom being provided by Network Connections, and further support from OTC and the NSW

Department of Education. The Centre still needs more corporate sponsors; the Light and Touch Talkers cost \$6000 each, and more computers and computer-literate volunteers are needed as well.

If you are interested in sponsoring the Centre, contact Bruce Alcorn at The Spastic Centre, (02) 451 9022. □

## Risc-based notebooks

APPLE AND ACORN have announced plans to set up a joint



research and development company called Arm Limited in the UK. The new company's primary aim will be to develop a new series of notebook computers based around Acorn's Risc chip to be marketed under the Apple brand name.

Neither company was releasing details of their plans as Newsbytes went to press. The move is particularly significant in light of Apple's interest in a new generation of machines, previously thought to be based around the 88000 and 88110 series of microprocessors. According to informed sources, Malcolm Bird, technical director with Acorn, has been instrumental in forming the new company. It was not clear at press time whether he will head up Arm.

This is not the first time that Apple has expressed an interest in Acorn's Risc technology. According to industry sources

Acorn Risc technology was in at the time, a deal involving the the offing when Apple was developing its successor to the Apple II series, but this was dropped when the company began developing the IIGS series based around a modified 6502 microprocessor. □

## AARNet expands

OTC HAS EXPANDED the capacity of the Australian Academic Research Network (AARNet) to cater to the greater than expected demand on the system. AARNet allows Australian academics to access international databases (mainly in the US) via satellite links. The network was established in August of this year, and many

local observers wondered if Australia had the 'tertiary sophistication' to maintain such a system, said Paul Rea, a spokesman for OTC. However, demand has been so great that OTC has now increased the capacity of the network from 56Kbps (kilobits per second) to 128Kbps through its Skystream service.

The network is run by the Australian Vice Chancellors' Committee, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and the Australian Committee of Directors and Principals. AARNet provides local researchers with links to research institutes and databases around the world from desktop terminals. It was expected that the 56Kbps capacity would be adequate till mid-1991, said Geoff Huston, AARNet's network technical manager. 'But acceptance and

use of the network by scholars and researchers has been so enthusiastic that the volume of data is growing by up to 12 per cent a week,' he said. (For more background, see 'AARNet' in our October, 1990, issue). □

## Flood of immigrants

THE NUMBER OF computing professionals migrating to Australia has increased substantially, according to Department of Immigration, local government and Ethnic Affairs figures. Statistics from the Department reveal that the intake since 1986 had increased 71.4 per cent for the period ended June 1990. Out of a total of 39,261 skilled workers who migrated during 1989/90, 18,791 were professional and technical people. Of these, 10 per cent were computing professionals. The government is intent on

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## Predictions for '95

THE FALL COMDEX of 1995 will feature not just new full colour LCD displays, but those capable of photorealism: 3000 by 2000 pixels with an image as fine as a photograph. There will also be '486-based machines that will fit in the purse or shirt pocket, not just for computing, but for communication, doubling as phones.

At COMDEX's 'State of the Art Technologies for the Mid-1990s' conference, Robert Carr of Go Corporation, a company building pen-based computing system software which IBM has already licensed, outlined the four major changes we'll see in computing products in mid-decade.

First, he says, the physical form factor will change. As a '486 computer is finally reduced to a single chip, the size of the unit will too. 'One vision is already on the floor,' he said, referring to the presence of the 1-pound Poqet computer at COMDEX. But conventional computers are limited by the presence of a keyboard. 'You can't shrink the keyboard,' he said, suggesting that a pen-based input system will be the best idea for the smaller sized units. He said that 1995's computers will feature variable screens from standard page to notepad sized screen and input surfaces.

Secondly, 'computers need a social form factor,' Carr stated. 'Today's disk-based keyboards are not used in social situations. The pen-based computer can be used unobtrusively in a meeting situation and your eyes can focus on your customer, not your computer.'

Thirdly, we'll see digital computers working with more analog information. By 1995, he says, a wide variety of analog information will be used: digitised voice, images, and video, all of which are difficult to mix today. Costs will come down and operating systems will be able to support this variety of inputs. The seamless integration of multimedia, he suggested, would usher in a new way of using computers. 'Desktop computers are productivity devices today,' he

said. 'When they're carried around all day long they'll become communication devices.'

The emergence of computers as communication devices will mean that electronic mail will blur into voice mail. There will be a single interface to manage all of them. This theme was echoed by Hewlett-Packard's William Crow, manager of NewWave Systems Technology, who showed off the NewWave operating environment as the architecture which will make possible the changes to which Carr referred. He said that 'objects and agents' will work together, objects being the icon-based technology of graphical interfaces, and agents being methods by which users can link diverse analog and digital input sources.

He showed a videotape similar to Apple's 'Navigator' video, which portrayed a neatly dressed executive of the future conducting a telephone conversation, viewing real-time video picture of his associate, on a window of his laptop. In another window is a spreadsheet, and during the course of the conversation they are jointly working on the file, transmitting new screen shots to each other, each in separate windows on the PC. Agents, for example, 'will enable full motion video to be included in a word processing document and will open desktop calendars and automatically insert dates,' he said.

Pat Geisinger of Intel's Platform Architecture Group reflected on the change of the past ten years, recalling when, in 1985, a 10Mb hard disk was considered state-of-the-art, black and white displays were the norm, and all PC users had to use Dos commands to run their programs. 1995, he said, will be the year we'll take for granted full colour LCD displays, 3D graphics, multimedia, high resolution approaching photorealistic quality, continuous speech recognition by computers, and the further humanising of interfaces.

seeing the figures increase even further. The Department of Education, Employment and Training, which devises a list of priority occupations has placed computing professionals and telecommunications engineers on top of the list in its efforts to recruit more highly skilled professionals from abroad. □

## Asian Multi-Vendor Alliance

FIVE LEADING COMPANIES in the microcomputer field have formed a Multi-Vendor Strategic Alliance (MVSA) to provide integrated customer offerings,

the first organisation of its kind in Asia. The companies involved are Ashton-Tate, AST, Autodesk, Lotus and Novell, who say they have combined forces to promote the importance of microcomputing technology to the Asian business world.

Initiated by AST Asia, the MVSA proposes to help make purchase decision-making safe and simple for the end-user of microcomputer hardware, software and networking products. Plans have already been made to test the products of each MVSA vendor on performance, compatibility and reliability. Joint promotions will be introduced to provide a handy solution to customers' needs.

AST Asia Director Alex Chu said, 'We see the alliance as a means of helping the user

through our combined unity and strength.' Bobby Cheng, Asian general manager of Autodesk, said 'I think it's an important step in the industry for an organisation like this to be able to address such issues as connectivity.'

The concept of total solutions has been pioneered in Hong Kong by major distributor, Gilman Business Systems, which mounted an exhibition on the topic for business users last month. Independent information technology consultant, Keith Cameron, told Newsbytes, 'The idea behind this alliance is very sound, but it needs a few more people behind it to be really effective. For instance, there's an outstanding gap without the participation of Microsoft. Without Microsoft, it doesn't have much

point. Nevertheless, I think it's a good idea, as long as it does not develop into a cartel.' □

## Longer life for batteries

ENGINEERS AT TOSHIBA have announced a new battery technology that they say not only provides users of portable computers with up to 80 per cent more power per unit weight of NiCad batteries but does away with what has been called the 'memory effect' that limits the capacity of earlier rechargeable cells. The new batteries are based on a nickel-metal hydride formulation based on the electrochemical





*Sydney company, The Corporate Task Force, has won the Australian Small Business Award (NSW) 1990, which is sponsored by Telecom and the Federal Government's Advance Australia Foundation. The company, which also trades as The Computer Broker, is best known for its software package SAMM (Sales And Marketing Management). On accepting the award from NSW Premier Nick Greiner (right), founder and chief executive Clive Rainbow commented, 'It is recognition of a dream come true of successfully running my own business. We couldn't have survived without using SAMM ourselves.'*

properties of a hydrogen-absorbing alloy. According to the description of the process released by Toshiba, this alloy becomes metal hydride during the charging of the battery by absorbing relatively large volumes of hydrogen. The reaction is reversed in the discharge cycle. The operating voltage of this battery is 1.2 volts and is compatible with NiCad in its applications.

Like NiCad batteries, nickel hydride batteries are completely enclosed with positive and negative electrodes sealed

with a liquid electrolyte. The capacity of the positive electrode determines the useful capacity of the battery. Unlike NiCad, the charge capacity of the negative pole, the hydrogen-absorbing alloy, is far higher than that of the positive pole material which means a much larger quantity of positive pole material can be contained within the structure, allowing a significant increase in the volume of the positive electrode and therefore a significant increase in charge capacity. □

## i750 for multimedia

INTEL HAS INTRODUCED two new chips that allow PCs to produce and interact with digital full-motion video and stereo sound. Joining Intel in the announcement were representatives from a number of major companies including IBM, Microsoft, AT&T, Lotus, Olivetti and two Japanese firms, Aplix and Shueisha, all of which are involved in projects that will involve the new chips.

The new chip set, priced under US\$100 in volume quantities, provides the user with full multimedia capability on two chips at less than one per cent of its original cost according to Dave House, president of Intel's Microcomputer Components Group. This means that these new chips should make a variety of applications affordable for common everyday use. According to Intel, the

i750 marks the first time full multimedia capability has been available using just two computer chips. Rick Stauffer, marketing manager for Intel's Princeton operation, told Newsbytes: 'The i750 is the first of a family of video processors the next generation of which will ship in early 1992. The family will span the price and performance range and will be fully upwardly compatible.'

Commenting on the introduction, Stauffer told Newsbytes that there have been many favourable and fair news reports about the new chip's introduction and customer reaction has been very enthusiastic. Companies like Sun Microsystems and Compaq have 'praised the DVI technology as a solution for multimedia,' added Stauffer. He also noted: 'We feel like all the key personal computer and workstation companies are working toward multimedia with DVI Technology.'

DVI technology is also to be used on the Macintosh platform. New Video Corporation, a US company active in providing hardware and software tools for interactive video on the Macintosh, has announced the development of Mac-based products built on Intel's DVI Technology. The key focus of the arrangement between Intel and New Video has been the development of products that are binary media file compatible with PC-based systems.

According to a statement issued by Peter Forman, president and CEO of New Video, IBM has chosen DVI Technology for multimedia using the PS/2 while Apple had chosen to develop its own multimedia technology creating the opportunity for New Video to combine the power of the Intel desktop video technology with the ease of use of the Macintosh.

New Video is currently prototyping delivery boards for software developers and expects to announce a line of products based on the i750 video processor shortly. □

# BACK<sup>4</sup>UP

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**Edited by  
Mark Cheeseman**

## Motherboard memory

*I have a rather elderly AT (about 3 years old), which I put together myself from boards acquired from a variety of sources. The motherboard's RAM uses 41256 chips, giving me 1Mb of storage, but I would like to increase that to 4Mb, without using an extra memory board, if possible. Can this be done? Presumably I will need 411000 chips (if that's the right number), but the motherboard manual only mentions 4164 and 41256 chips.*

**E. Catling**

The simple answer is 'no', it can't be done. Not easily, at least. The mother-

board was obviously designed before 1Mb chips became widely available, and so no provision was made for them. So, unless you feel like cutting tracks and soldering wires to the motherboard, forget upgrading it, and get yourself a memory board.

There is another advantage of using a memory board, especially on a '286-based system, such as yours. Most boards can be configured as either extended or expanded memory, so that you can select the appropriate type of memory for the applications which you are running. While EMS emulators are available, which make extended memory on a '286 look like expanded, they are slow, since the processor needs to be running in protected mode to access the extended memory, and switching back to real mode necessitates resetting the processor, which wastes a considerable amount of time.

## Interlaced video

*I have a Trident TVGA SuperVGA card, and an NEC MultiSync 3D monitor, which I use to run AutoCAD at 800 x 600 dots resolution – the extra resolution is really useful for examining detailed drawings. However, upon closer inspection of the documentation for both the card and monitor, I discovered that they both support an even higher resolution mode – 1024 x 768 dots.*

*Unfortunately, whenever I switch to this mode, the screen flickers noticeably, to the point of being virtually unwatchable, especially when displaying shaded regions. Is there some mutual incompatibility between the high resolution modes of the card and monitor, or is there another reason. At the moment, I am limited to 800 x 600 mode, which is why I originally bought the card and monitor, but if it is capable of displaying a higher resolution, why not use it?*

**J. Brian**

The flicker which you have observed is caused by the way in which the card and monitor generate the image for display, called interlacing. An interlaced display consists of two fields – one containing the odd-numbered scan lines, and the other containing the even-numbered ones. The complete screen image consists of both of these fields, which are displayed alternately on the screen, rather than the entire image being displayed in one sweep of the electron gun.

Monitors have a specification called *bandwidth*, which describes how fast the electron gun can be turned on and off, and consequently how many pixels can be displayed in one sweep of the electron gun.

The higher the bandwidth, the higher the resolution of the image, all other things being equal.

Interlacing is a means of doubling the resolution of the display, without needing to double the bandwidth of the monitor, which is expensive. Since, on each sweep of the screen, the electron gun only builds up half of the picture, the amount of information that can be displayed on the screen is effectively doubled.

We all know what they say about free lunches, and monitors are no exception. The price of this doubling of screen information is that any given pixel is only updated half as often as it would be on a non-interlaced display, so it appears to flicker. High-persistence phosphors on the back of the screen can minimise this problem, but they are generally only used on monitors designed for interlaced display, rather than universal monitors such as the MultiSync. The IBM 8514/A monitor uses interlaced display, and IBM claims that there is no discernible screen flicker.

Ordinary TV pictures are also interlaced, but the flicker is not noticeable, due to the much higher screen to eye distance.

Aside from getting a high-persistence multisync-type monitor (if such a beast exists), the only real solution is to get a non-interlaced monitor (such as the NEC 4D), and a card capable of driving it. The other consideration here is that most 14-inch screens do not have a fine enough dot pitch to display 1024 x 768 pixel images – interlaced or not. The MultiSync 4D has a 16-inch tube, giving that much extra display area for complex images.

## Hard disk connector

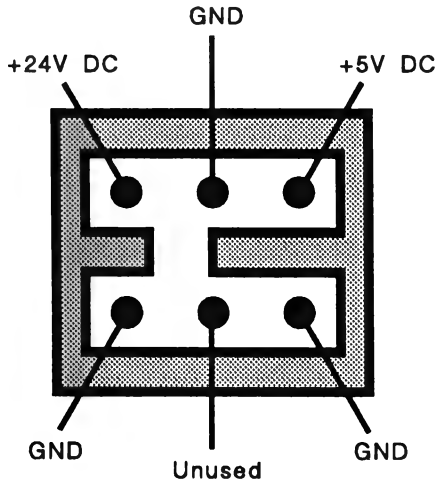
*I recently came across a Priam 803-11 110Mb SCSI hard drive. It was originally housed in a mini computer made by a company called Tecmar. Unfortunately it appears to have a non-standard power connector, having six pins in two parallel rows of three. After contacting the Australian distributor for Priam I was informed that they had gone bust, and that the distributor had never heard of the 803-11. I would be most appreciative of any information that you could come up with.*

*I have only just begun reading your magazine again after a two-year break. I was a most avid reader back in the days when 32K of Ram in a Z80 or 6809 was a big thing. You appear to have changed things a bit, but you're still looking good.*

**C. Dann**



Thanks for that, and welcome back! While I am not familiar with the particular model of drive either, it sounds to me like the type of power connector used on 8-inch disk drives in the days when they were a little more common than they are now. These drives had a +24V motor supply, and a +5V logic supply, and were powered through a 6-pin connector similar to the one you describe. This is how the connector is configured –



Just for safety, take a look at the drive motor to see if you can ascertain its voltage rating, and make sure that it really is 24 volts, or you could do some expensive damage. However, I think it is unlikely that Priam would have used a 12 volt motor on a drive with a 24 volt power connector. If you are unsure, you could always try powering it from 12 volts at first, and if the motor doesn't spin up, then try 24V.

## Backing up several PCs

*In our office we have four PCs, which we use for various tasks. The machines are not networked, since we seldom have any need to share or exchange data between them, since they are all used for different purposes, and a simple printer switch box allows us to share printers.*

*However, following a disk crash on one of the machines, it was decided that we should invest in some form of backup system, probably a tape drive. However, adding a tape drive to each machine seems a little expensive, and installing a network seems a bit 'over the top' just for backup purposes. Ideally, what we want is a system similar to the printer sharing box, where a single tape drive can be shared between the machines, and switched between them, as required.*

*R. Joyce*

Tape drives for PCs can be either internally or externally mounted. Internal units are cheaper, since they save by not needing a case or power supply.

However, a single external unit with several controller cards will usually cost less than an internal drive for each machine. A controller card is installed in each of the computers, and when it is desired to back up the drive in a given machine, the tape drive is plugged into that machine, so the backup can be performed.

While plugging and un-plugging the tape drive cable might be a bit inconvenient, it is a lot less trouble than feeding a stack of floppies into the drive one at a time, or re-keying a few megs of lost data. External tape drives generally use 37-pin D-connectors, and obtaining a 4-way switch box to switch this many lines could prove difficult. Also, long cables may not be very reliable at the sort of speeds used by tape drives, so a switch box would be of little use unless the machines were located close together.

Don't forget, too, that if you were to install a simple network (such as LANtastic), it would not only allow you to back up all hard disks using a single internal tape drive, but would also eliminate the need for your printer sharing switch, since the network would take care of allocating the printer to users as they needed it.

## Parallel to serial

*Our office recently upgraded from a rather ancient CompuPro multi-user CP/M system to a Novell network of PCs, and this included upgrading our printers to an HP LaserJet series III, connected to the server. This works fine, but we have been left with two orphaned serial printers, a Toshiba dot-matrix, and a Brother HR-15 daisy wheel. Both of these printers are still in good condition, and would be useful to take some of the load off the LaserJet, and to serve as a backup, should the laser break down for some reason.*

*The server has two serial ports and two parallel ports, with one serial port connected to a modem for remote logins to the network, and one of the parallel ports connected to the LaserJet. This leaves us with two serial printers, but only one serial port, and the dealer who sold us the network says that Novell cannot support a third serial port. Is there any way that we can connect one of these printers to the spare parallel port, or will we just have to switch the spare serial port between the two of them?*

*G. Carr*

Black Box has a bewildering range of 'this-to-that' boxes, which can convert just about any interface to any other one (well, almost). The company has a converter

## How many files?

You've just bought yourself a new laptop, and you're trying to install your favourite software on its hard disk. Out with Flight Simulator 3, on its two 360K disks. The laptop only has a 3.5-inch drive, but fortunately your main machine has both flavours of drive, so you proceed to copy the two distribution disks onto a blank 3.5-inch diskette. The first disk copies without drama, as does most of the second one. However, before the copy can complete, the message 'File Creation Error' appears. That's odd; the contents of two 360K disks should fit onto a 720K number without any trouble, a directory of the target disk shows there is still space to spare.

The cause of this problem is quite simple, really. When Dos formats a disk, it creates (amongst other things) a root directory on the disk, which stores file-names, attributes, file length, and the starting cluster of the files and directories on the disk. However, this root directory is fixed in size, and on a double den-

sity floppy (360- or 720K), it can contain only 112 files or directories. Since there are more than that many files on both Flight Simulator disks, there isn't room in the root directory of the 3.5-inch disk for all the files from both source disks, even though there is enough space for the files themselves. High density (1.2- and 1.44Mb) disks can have double that number of files in their root directories, and hard disks can have 512.

The solution? Create a sub-directory, and put all the files in there. Sub-directories can expand as needed – in fact they are just special files as far as disk allocation is concerned, and Dos simply adds another cluster to the end of the directory to put more files in when required. So, provided there is enough space on the disk itself, you can put as many files as you like into a sub-directory.

By the way, don't forget that a system disk has two hidden files on it which add to the total, and if you give the disk a volume label, that counts as another file.



called the Serial – Parallel Converter II, which should do exactly what you want – allow you to use a serial printer on a parallel port (it also does the reverse). Just buy one of these and connect it between the parallel port and the printer.

They can also be supplied with a 256K or 512K buffer, but since you are presumably using Novell's built-in spooler, there would be no advantage in your case. Black Box can be contacted on (03) 725 2422.

## Printer driver problem

*I have been a bit hesitant in writing to you, as I am not a regular subscriber; I buy my magazines from the local newsagent and as such, do not buy every issue of Your Computer. Nevertheless, I am hoping you will be willing to help me through your 'Tech Tips' column.*

*I have a copy of MS Works 2.0, which I use for word processing, and an HP DeskJet Plus printer. I have purchased 2 proportional-spaced font cartridges for the printer, and am having trouble with the output which Microsoft support has been unable to resolve (although they have been helpful). They have provided me with a number of drivers, called DeskJet 1, 2, 3, and 4, that I understand are also used for MS Word.*

*The problem seems to occur (generally, but not always) if the 14th character position from the left margin is a space. Drivers 1 and 3 both add two extra spaces at this point (giving three in total), while drivers 2 and 4 omit the space and join the words together.*

*I am presently using driver 4, and having to proof-read each letter, then add an additional space where words are joined together, before printing the final copy. The real frustration begins when I then edit the letter, or change margins or indents in any way, as I then have to proof read again, add additional spaces, and remove those spaces previously added.*

**P. Cain**

Unfortunately, having neither an HP DeskJet printer nor MS Works readily available to me, it is impossible to try to simulate your problem. If you have access to another printer (not an HP DeskJet), you could narrow down the problem to the driver, by printing a problem document to this printer, through the appropriate driver. I am assuming that you don't have any problems with the printer with other applications – it would be wise to check, just to be sure.

Assuming the above confirms that the driver is at fault, another thing you could try is using the drivers for the HP LaserJet,

as the DeskJet is supposed to emulate that printer (although I'm not sure which model). If that doesn't work, perhaps you should ask for your money back.

## Laptop battery capacity

*I have a Toshiba T1200 laptop with a hard disk, but I cannot get it to work for any length of time from the battery. Normally this is not a problem, as I use the machine in the office and keep it plugged into the mains, so that the battery stays charged up. However, I took the machine out the other day, and it only worked for a few minutes before the battery failed. Fortunately I took along the power supply, and was able to continue working from the mains. The machine is a couple of years old, but I would have expected a better life expectancy from the battery than this.*

**S. O'Toole**

These are the classic symptoms of the 'memory' effect, which plagues nickel-cadmium batteries, such as those in your Toshiba. When the battery is repeatedly discharged, but not totally, it tends to remember the amount of charge delivered, and on subsequent cycles the battery will only deliver this amount of charge to the laptop before going flat.

At first glance, it might appear that you shouldn't have a problem, since the battery hasn't been discharged at all, with the power for the machine coming exclusively from the mains adapter. In truth, the battery has been cycled every time that you have used the machine. Nicad batteries, when left alone, tend to self-discharge, at a rather high rate – this can be as high as one per cent per day. All batteries do this to some extent (even car batteries), although most are not as bad as NiCads.

So each time the machine is turned off, the battery starts to discharge, and this discharge will be enhanced by the Toshiba's resume mode (if you have enabled it), which maintains power to the system memory when the power is off. Some later model Toshibas do this whether resume mode is enabled or not, to power the 'hard Ram' virtual disk drive, although I am not sure about the T1200.

When the machine is powered up again, (say, the next day), the charger starts charging the battery again, but because the battery wasn't fully discharged (in fact, it was nearly fully charged), the memory effect starts to become noticeable, especially if this cycle occurs regularly, like every day. So when you tried to use the laptop without the power adapter, the bat-

tery could only supply as much power as it had during those small overnight discharges, and so it died after a few minutes.

Fortunately, the problem is not permanent, and can be reversed (at least partially) by charging and discharging the battery for a few complete cycles. I'm not sure whether this will ever *fully* restore the capacity of the battery, but it will certainly come close. Plug the charger into the laptop, and let it charge the battery fully up (leave the machine turned off if possible, as this will hasten the charging process). Then unplug the charger, and run the laptop from the battery until the battery goes flat, and the machine shuts itself down. Repeat this cycle a couple more times, and each time you should notice an improvement in the time that the laptop functions before the battery fails.

For the curious, I have never come across an adequate explanation of *why* the memory effect occurs, at a chemical level, and that's not for want of trying. However, it seems to effect small NiCads more than larger ones, and very large nicads, such as those used in solar power systems, do not seem to suffer from memory effect at all. Not much comfort for those of us who can't carry around a 20kg battery with our laptops!

## Phone line sharer

Like many users, you probably only have one phone line to share between the phone and modem. However, it's more than just a tad annoying to have somebody pick up the phone in the middle of a file transfer, which usually results in the transfer being aborted.

Arista Electronics has a handy little device, which allows two devices to share a phone line, but when one is using the line, the other is cut out. Although it is intended to allow two phones to connect to a single phone line, it can in fact be used with anything which connects to a telephone line, including modems, faxes, and answering machines. So just connect this little gadget to the phone line, and plug the phone(s) into one socket, and the modem into the other.

Now, whenever you are using the modem, any phones connected to the other socket on the sharer will be dead, and if a phone is in use, the modem cannot grab the line and disrupt the conversation. Incoming calls are diverted to both sockets, and the first device to answer the call (phone or modem) gets exclusive use of the line for the duration of the call.



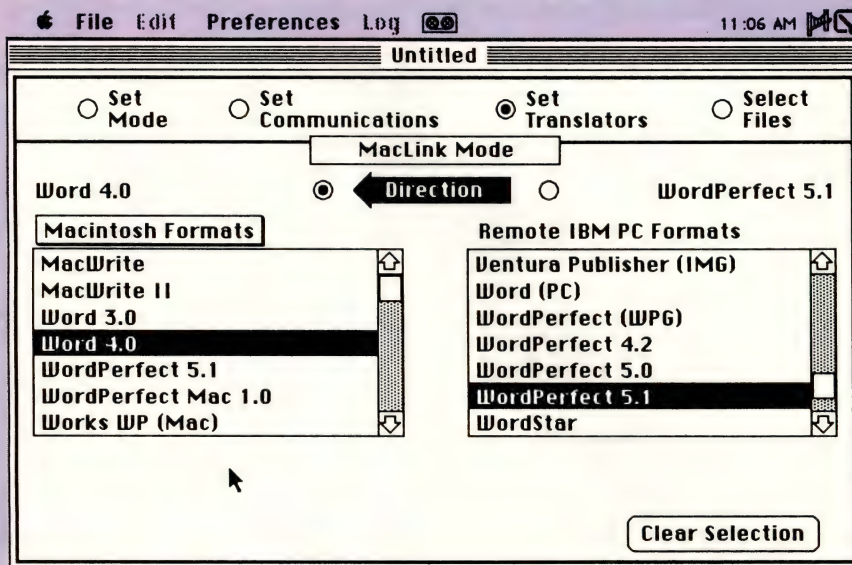
## From PC to Mac and back

Many readers will be familiar with Traveling Software's LapLink — LapLink III being the most recent, and most versatile, release to date. For those who haven't seen or used it, LapLink is a rather unusual communications program that allows files and directories to be copied from one PC to another, via the machines' serial or parallel ports. LapLink III is one of the most-used packages in the *Your Computer* offices, enabling us to install our favourite applications, utilities, and benchmarks on review machines in a single operation, without the tedious swapping of floppy disks back and forth.

MacLink Plus/PC follows a similar idea, but across platforms, specifically between the Mac and PC environments. As any Mac user knows, the physical formats of Mac and MS-Dos floppies are as different as chalk and cheese, and until Apple started putting FDHD 'super drives' in their machines, there was no way that you could take a disk from a standard PC drive, and put it into the Mac, and read it. The fact that most PCs had 5.25-inch drives didn't help much either — folding the disk over on one edge so that it would fit into the Mac's drive was seldom successful, and tended to make re-use on the Dos machine difficult as well. Transferring and translating files between platforms account for a lot of the enquiries we receive for the *Tech Tips* column, and of course with the IBM PC and Mac platforms being the two dominant PC platforms, this package should solve a large proportion of those problems. As a bonus, it can also transfer files between the Mac and either a Sun or NeXT workstation.

Sure, there were third-party solutions, such as a PC expansion card, which connected to a standard Mac external floppy drive, or the DaynaFile, which connected to the Mac's SCSI port, allowing 3.5- and 5.25-inch Dos disks to be read and written as 'normal' Mac storage devices. But they were expensive, and didn't address the question of file-format translation. Some packages such as MS Word and Aldus PageMaker use the same file formats on both platforms, but this is something of an exception. Also, while an application might be the program of choice on the PC platform, its Mac version might fall well short in terms of capabilities of other equivalent Mac applications.

Enter MacLink Plus/PC, from DataViz Inc. In a similar way to LapLink, it is a hardware/software solution, consisting of a set of disks, and a few cables. Obviously, since MacLink is a cross-platform file



transfer facility, software is supplied for both the PC and Mac ends of the connection. The PC software is also supplied on both 5.25- and 3.5-inch diskettes, while of course the Mac only needs 3.5-inchers.

The main cable is a PC-to-Mac null-modem, with a DB-25 connector on the PC end, and an 8-pin mini-DIN plug for the Mac end, which can be plugged into either the printer or modem ports on this machine, while the PC end is restricted to the first two serial ports. A 9-pin adapter ensures that PCs with these smaller serial ports are covered as well. An odd omission is any provision for connection to earlier Macs, which used DB-9 connectors for its serial ports. The third component of the cable assembly is another (though shorter) DB-25 to 8-pin adapter, which allows MacLink to link two Macs, or link a Mac to a NeXT workstation.

MacLink Plus operates at any standard serial port speed from 300- (ouch!) up to the default 57,600bps, which is as fast as the Mac can go. Firing up the software at both ends and giving the 'connect' command gets things going, with the transfers and translations being controlled from the Mac end.

The first thing to do is to select what file translation (if any) is to be used. For example, a WordStar file from the PC can be converted to MacWrite, or MS Word on the Mac. The available Mac file formats are displayed on the left-hand side of the Mac screen, while those for the PC appear on the right. Once the file formats have been selected, and the desired direction for the translation is chosen the

files may be selected.

When the 'select files' option is chosen, the same two panels which displayed the available file formats now display the files on the selected drives on each computer. The Mac's hierarchical file structure can be navigated in the usual way, while the PC's directory tree also appears in the form of a Mac HFS.

Multiple files can be copied in a batch, and MacLink automatically chooses filenames appropriate to the destination platform, although these can be changed if desired.

MacLink Plus/PC supports literally dozens of file formats, including word processors, spreadsheets, databases and graphics applications. A total of 31 Mac formats and 37 PC formats can be converted, in addition to 10 formats each for NeXT and Sun machines. While there are some conversion limitations when special features are unsupported in one or the other of the programs, MacLink does its best to translate as much information as possible.

MacLink Plus/PC also has a 'local desktop mode' which just performs the file translation function, with both the source and destination files already residing on the Mac file system. This allows MacLink's powerful translators to be used if you have a DaynaFile or FDHD drive, or a mixed PC/Mac network, thus bypassing the time-consuming serial file transfer process.

MacLink Plus/PC is distributed in Australia by Infomagic (02) 975 1044, and is priced at \$330.



# PERSONAL

## YOUR COMPUTER'S 9TH

# OF THE YEAR AWARDS

### THE WINNERS!

Jake Kennedy reports on the 10th annual Personal Computer of the Year award winners and the reasons behind the choices . . .

**E**ACH YEAR WE present our Computer of the Year Awards primarily as a service to those who are looking towards their future computing needs. A computer system represents a significant investment, whether it's to be used as a business tool or a fun machine. But the dynamics of the industry often cause users to hesitate before committing themselves: should I upgrade to a '386 now that prices are coming down, or wait until '486s are better priced; will I be able to use the software I'm going to buy today with the computer system I am likely to have in two years?

Questions like this need to be asked, and asked they are throughout the computer world, not just in the PC arena. MIS managers and recreational users alike are faced with variations on those same questions, which can be summarised as 'how will future developments affect *my* investment and commitments?' The greater that investment and commitment are, the more difficult the questions become to answer.

However, even in the computer industry those developments tend to be linear (even if they are often logarithmic in their linearity!), so tomorrow's entry-level tech-



nology will very likely evolve from today's state-of-the-art offerings. And therein lies guidance in seeking those answers – and reason to nominate products that spot-

light the future of personal computing.

There are four categories to the Awards: Personal Computer of the Year, in which we consider all forms of hardware, Software Product of the Year, and the Commendations for Australian Hardware and Software. In the present economic climate, the Commendations have special significance in that our local high-tech products have an enormous potential to earn export dollars – and the local industry needs every bit of encouragement available to it.

#### Personal Computer of the Year

LAST MONTH WE nominated six hardware Finalists: Commodore's A3000 multimedia platform; a flexible, portable solution and a high-end performer from Compaq, respectively the LTE386s/20 and the





# COMPUTER

Systempro 486/25 (which was also a contender in last year's Awards, but had to be withdrawn because of the buggy '486 chip); a new standard in laser printing from Hewlett-Packard, the LaserJet III; IBM's pace-setting System/6000 model 320; and a welcome addition to the Mac world, Outbound's innovative Laptop system. As we noted then, it's the most diverse selection of Finalists we've ever seen.

The criteria used to judge the Awards were discussed in detail in our January issue and are summarised here in a separate box item, 'The rules'. In selecting our winner – which you'll have already noted, I'm sure – we applied these rules to each of the Finalists and used a very simple points system:

**Technical excellence.** The four machines from Commodore, Compaq and Hewlett-Packard are all – essentially – based on previous proven products. Their design and engineering can't be faulted – 'excellent' in every case, so an almost automatic 'plus' to the four of them. The model 320 and the Outbound system are both completely new, but the features they offer and their own design and engineering keep them in the running – we gave the IBM a plus, but when it came to the Outbound, we had to give it 'half' because the unit we were given had faults that need to be addressed.

**Innovation.** Each year this is the criterion that is most difficult to judge. 'Innovation' *per se* is most often easy to recognise: it hasn't been done this way before. But, innovation for its own sake has little meaning in a practical world; it needs to represent more than 'new', it must demonstrate a better, more efficient and more productive way to an end. The Amiga A3000 does just that: Commodore have brought multimedia to the 'common man' with this machine. The combination of a 32-bit processor and optimised graphics handling ensured it a plus. The LTE carries on the portable tradition that was begun by the HP 110 in 1985 and ably carried forward by Toshiba (which won in 1989 and 1990 with its portables) and Compaq itself (the first LTE model was a Finalist last year), and extends it: both the

motherboard and the clean integration of the machine with its docking station are truly innovative – a plus.

More than any other '486, the Systempro takes advantage of that chip's capabilities: the combination of EISA, the bus-master and Compaq's expertise at caching spells innovation through fine-tuning – a plus. When we considered the LaserJet here, the first question that arose was: 'How could number III in a product series be innovative?' The answer ('Resolution enhancement that makes the 300dpi output almost look like a 1000, and *fast* complex graphics printing'), we felt was only worth a 'half'. IBM's implementation of the superscalar CPU in the 320 and its bigger brothers, and Outbound's sideways logic in using the Mac's own ROM chips and in conceiving a new type of pointing device gave these two a plus.

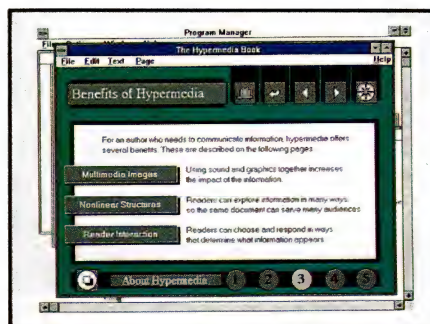
**Ergonomics.** There is more to ergonomic design than preventing RSI and backache – the product must be logical and intuitive to use. Here, we also need to bear in mind the intended market, users and uses alike. Each of this diverse range needed to be judged from quite different ergonomic viewpoints – but regardless of the perspective, they all came up a plus, with special mention reserved for the Amiga's upgraded operating system and the Outbound's IsoPoint replacement for a mouse or track ball.

**Value.** One side of the value coin reads 'comparative cost for supplied features', but there is a second side which adds another dimension: value-added through

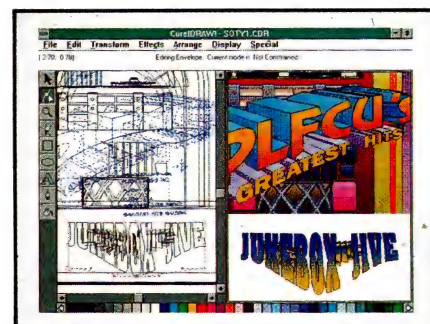
flexibility. With that in mind, we immediately gave the LTE (with its docking station) a plus and judged the others against it. Even though it takes a very different approach than the LTE, the Outbound is just as flexible – another plus. HP's reducing the price of the LaserJet on the release of the enhanced III also earned a plus. On their introduction, the System/6000 machines gave more 'bang for buck' than had previously been seen in the workstation market – a plus for sure. Judging the 'value' of the A3000 and the Systempro caused more soul searching than any other decision in this year's Awards. We gave them each a half – not because we think they are overpriced; they most certainly are not – simply because they lacked value-adding flexibility and there was no set of features that made up for that.

**Presentation.** All of the Finalists are in a very competitive market – the likes of second rate 'packaging' and poor manuals have no place in such professional company. Commodore, Compaq, Hewlett-Packard and IBM present their products in the manner you would expect from such world-class companies, and the Outbound is in the same class – pluses all around.

**Market placement.** Does it address a broad range of user needs effectively? Has it created a niche of its own? How does it compare in features with products aimed at the same market? Those were the questions we used as a starting point in judging for this criterion last year. And, like last year, trying to answer those questions

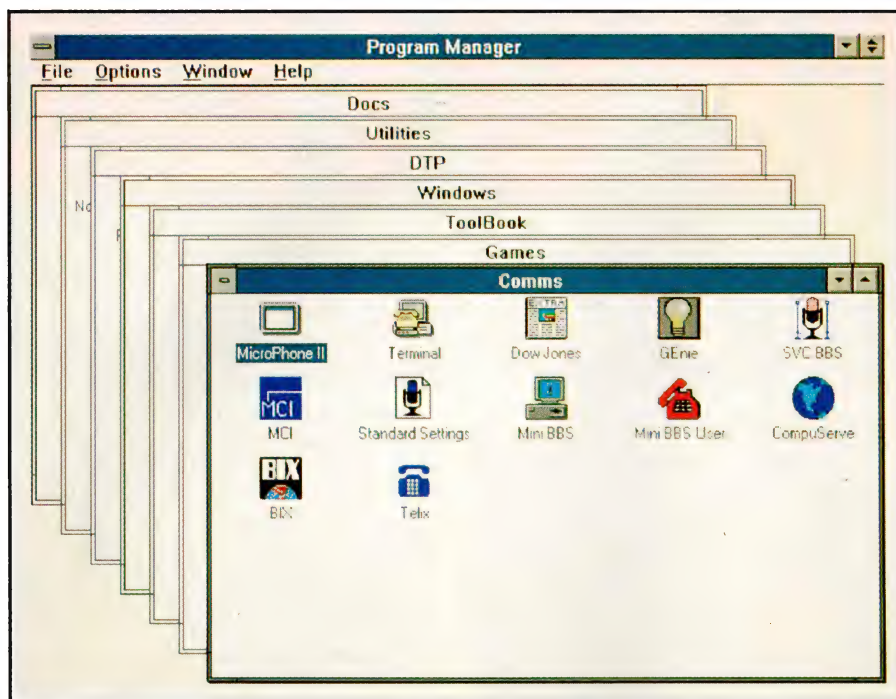


**ToolBook will keep developers busy for some time to come.**



**CorelDraw – a bargain for illustrators of all hues.**





**Microsoft Windows – Software Product of the Year.**

led us to the same dead-end.

So – we took the same tack used to break last year's deadlock and arranged the machines in, what we saw, as their order of mass appeal, giving the first three a plus and the second, a half. The Amiga's overall capabilities, the LTE's cost-effective flexibility, and the LaserJet's general applicability put those in the first three. While we have nothing but admiration and envy for the power of the Systempro and the model 320, it was evident that they fit into what is still a relatively small niche, albeit one that most of us will enter in the next several years. The decision on the Outbound's appeal was, in the end, based on the fact that buyers first need to commit themselves to the Macintosh cause.

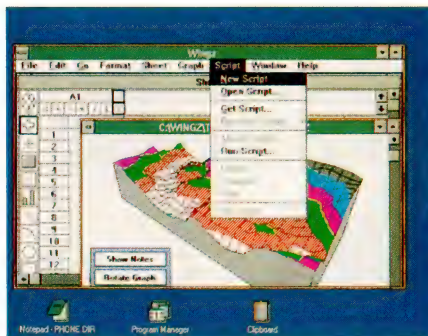
The diversity of the computers made this year's judging the most soul-searching session we've had, but, looking back now we are proud to point to Compaq's LTE386s/20 as 1991's Personal Computer of the Year. Congratulations are certainly due to Compaq for its continuing position at the head of the technological pack!

### Software Product of the Year

OUR SOFTWARE FINALISTS this year were just as diverse as the hardware: an environment for application development, Asymetrix' Toolbook; a powerful animation tool, Autodesk's Animator; a rela-

tional database for workgroups, Borland's Paradox 3.5; the solution for object-oriented programming, Borland's Turbo C++; a full-featured drawing bargain, CorelDraw; a graphical spreadsheet, Wingz for the PC; a logical presentation tool, Microsoft's PowerPoint; and a friendly shell for the PC, Microsoft's Windows 3.0.

Microsoft's Windows 3.0 was our unanimous choice for 1991's Software Product of the Year. What we said last month sums up our feelings: 'If you are looking to the future today, a commitment to Windows will give a solid base to build from: now that Microsoft and IBM are independently



**Informix' Wingz – not just a spreadsheet, but a full-colour mathematical modeller.**

responsible for the development of Windows and OS/2, respectively, you can expect to see many of the high-end features of OS/2 appear in Windows. Also, Microsoft has declared that it intends to eventually make Windows a common development environment for both Dos and OS/2 applications.

Today, Windows gives Dos users a 'common' interface that imparts a logic to the software running under it – the previous lack of that logic has made it a struggle for many users to master software.'

It should be noted that one reason for our choice was the enthusiastic response the latest release of Windows has had for developers. Of the seven Software Finalists, four of them were written to run under Windows and the flood of software supporting it is only just beginning.

More than any other software product we've seen for the PC, Windows is going to affect the world personal computers. In addition to the graphical user interface (the merits of which were discussed in detail in our August, 1990, issue), the ease it imparts to exchanging data between applications will broaden the horizons for anyone who wants real productivity from their PC. No longer will users be running three, say, different applications at different times during the day, all will run concurrently in their own window. True, that was possible with earlier versions of Windows, but now it is possible to effectively multitask standard Dos applications, particularly in 386 mode.

Our congratulations to Microsoft and co-founder Bill Gates.

The contender that gave Windows the strongest competition was CorelDraw. In the Finalists write-up we commented that it was 'a bargain for illustrators of all hues.' Then we were talking about version 1.2, but, in the meantime, version 2.0 has hit our desks, strongly re-inforcing our feelings. It's been specifically re-written for Windows 3.0 and is now a PC illustrator's dream. Aside from the fact it takes full advantage of 386 mode, adds its own file and library manager (made necessary by the 750 compressed clip art and symbol images which are included), and includes a font editor, there are four special effects that make it the most powerful drawing package we have seen on a PC.

The Envelope effect (used on the words 'Juke Box' in the accompanying screen shot) will distort any text or graphics and Perspective gives true mathematical perspective. Extruding can be used to give objects visual depth with a three-dimensional appearance and the Blend effect



automatically generates intermediate shapes and colours between two original objects.

Incidentally, the screen shots with this article were turned into slides using another Microsoft Finalist: PowerPoint. The images were captured with Print Screen, stored on the clipboard, pasted into PowerPoint, modemed to Business Graphics in Melbourne and were back here the next day as 35mm slides. That ease of use – which can be used to create presentations complete with handouts and notes with copies of the slides – is the main reason we considered it as a Finalist. (For a complete review of PowerPoint, see our January issue.)

Last month we said, 'The features that ToolBook offers (and even inexperienced users will find them easy to master), are going to keep developers at all levels busy for some time to come, quickly creating applications across the spectrum, from straightforward educational material to sophisticated data management.' This is another product that will most likely change the way we use computers, but, on reflection, we'd like to leave further accolades until we see what those developers do with it.

We feel the same about Borland's Turbo C++. Here, though the effects may eventually be as wide-spread as those from Toolbook, in many cases users won't even know it's there. What they will know is how easy 'objects' have become to work with. In fact, the efficient tool it offers to developers will probably mean that fewer people will feel the need to learn a programming language to solve a particular problem. It could well be a case of 'pulling itself down by the bootstraps,' as Mark described it.

The more I use Informix' Wingz, the less I think of it as a spreadsheet. Its power as a full-colour mathematical modeller will make it useful to anyone, from surveyors to organic chemists, who needs to make sense from a google of data. Its problem solving abilities are a boon for those who need to work with budgets. Its drawing tools and report generating options make creating clear, concise presentations from dry numbers, easy ... and it was written for Windows 3.0.

Borland's Paradox 3.5 (and other applications with a full featured SQL link) are going to enhance the computing lives of those of us who need to use a database across a network. According to the gurus, that will be a fair proportion of users by the middle of this decade. And, its intelligent use of memory and other fine-tunes,

## The rules

AT THE END OF each year when it comes time to judge the Awards, we find ourselves in a dilemma: how can the megapower of machines designed as engineering tools and network servers and the emotional impact of small and elegant PC solutions be asked to compete with one another? Each year as the power versus elegance arguments arise, we find ourselves returning to basics and stringently applying the criteria (all roughly equal in importance) we have used throughout the Personal Computer of the Year's history –

- Technical excellence in design and engineering, including quality, reliability, 'feel' and features.

- Innovation – is the product truly new and conceptually different? Does it offer types of features never-before available?

- Ergonomics in terms of both hardware and software design – is it easy and comfortable to use; is the design logical and intuitive?

- Value – are the features and functions worth the asking price?

- Presentation: How does the product look? What are the documents and packaging like?

- Market acceptance and placement – what do users think about the product? How well has it been accepted? Does it address a broad range of user needs effectively? Has it created a new niche of its own? How does it compare in the market with products aimed at a similar market?

Note that we do not feel constrained to consider only those criteria. With the current geometric rate of development in the computer industry, a product that breaks all the rules could be released at any time and be precluded by these criteria – even though it might be totally revolutionary to personal computing.

make about the fastest database we've seen and a lesson to other developers.

By far, the most 'fun' package among our Finalists is Autodesk's Animator. While its animation and general presentation-creating features take it into the high-end of presentation graphics, those of us at the low-end can have a great time creating our own animations with the five different ways of adding movement to a scene. Even more fun is to couple it with a video recorder and add colourful graphics and animated comments to videos of

every description – and the price makes it affordable to just about everyone.

## Australian Commendations

IT'S APPARENT FROM the Australian-developed products we've seen this year that our local industry isn't lagging behind the rest of the world. In fact, in some areas we are leading – this is particularly true in the field of communications (where past Commendation winner NetComm has been commissioned to develop modems for both Toshiba and Apple). Perhaps it's the 'tyranny of distance', but this has always been an area in which the local teams reach world standards – further witness Cybersoft which took the Commendation two years ago with its communications 'engine' and Program Development Systems' serial port network, Freeway, which was awarded both the Hardware and Software Commendations last year.

**Software Commendation:** But it's not only in the field of communication where our local expertise shines. Queensland company Hi-Tech, has recently released ATDos which could save any number of '286 users who are thinking of moving up to a '386, a lot of money. ATDos is a Dos 'replacement' that takes full advantage of the '286 chip's protected mode (OS/2 is the only other operating system we know of that can do that) and can support up to 16Mb of Ram. It has a 'GUI interface and will happily multitask with two or three standard Dos applications at the same time. The installed base of '286 machines now represents almost half the PCs in the world, so it's a product that immediately raises the question, 'why wasn't it done before?'

The next two products we considered could be thought of as communications 'adjuncts', since a significant part of communications involves exchanging program files, whether by floppy or modem.

Readers will remember that earlier this year we inadvertently distributed a truncated version of the Marijuana virus with a disk offer. The company we turned to was also from Queensland – Leprechaun Software, which had then just released its VirusBuster software. In addition to constantly adding protection against new viruses, Leprechaun now has a fast Windows version of the program (3.5) with full mouse support and it still needs only 4K of Ram when loaded. The new release can also kill Dos-style viruses without signature, giving protection against as yet unidentified varieties. A utility, VBCopy is now included to replace Dos' Copy and



## PCs of yesteryear

THIS IS THE ninth year that *Your Computer* has nominated a Personal Computer of the Year and the eighth for Software Product of the Year. The history of the Awards is quite an interesting summary of the past of personal computing, highlighting some of the most and least successful products to appear on the market. The winners were invariably innovative in one way or another, and indicated the current state-of-the-art.

The first awards, announced in the May 1983 issue, had six hardware finalists – three 8-bit machines, and the rest with 16-bit processors. One of these was the original IBM-PC, and there was the Columbia MPC, one of the first PC clones. The award was given to the NEC Advanced Personal Computer, an 8086-based machine with an impressive (for the time) graphics resolution of 640 x 475. That's only five lines less in the vertical direction than the current VGA! The dominant operating system at the time was CP/M, either 2.2 for the 8-bit machines, or CP/M-86 for the 8088 and 8086 processors.

In 1984 we introduced a new category: Software Product of the Year, which was snapped up by Lotus 1-2-3 – one of the most successful programs ever written. On the other hand, the winner of the hardware award was the ill-fated Apple Lisa, which was so far ahead of all the other finalists in terms of features and performance (it had a 68000 32/16-bit processor, and a whole megabyte of RAM), that the judges found it a straightforward choice. Unfortunately, its success was short-lived, and the machine died soon after, although many of its features re-appeared in the Macintosh range.

The first laptop to win the PCOTY Award was Hewlett-Packard's HP 110, the

winner in 1985. It sported a 5.33MHz 80C86, 272K of CMOS RAM, a 16-line display, and a single disk drive. That year, Microsoft's Flight Simulator stole the software award from the likes of SideKick, Open Access, Symphony and Concurrent CP/M 3.11 (for the IBM-PC, believe it or not).

Big Blue took out the 1986 PC Award, with the PC/AT. Although the machine had already spawned the first of a never-ending rush of clones, IBM was awarded the prize for setting the pace. The software award went to Symantec's Q&A, the integrated database manager and word processor.

In 1987, the finalists included the Commodore Amiga, Apple IIGS, and the Toshiba T3100 laptop, and the winner was Compaq's Deskpro 386, one of the first 386-based PC clones to appear on the market. Aldus took out the Software Award that year for PageMaker, which ran under both the Mac and Dos environments (the latter with Windows).

1988 saw a close battle between the Compaq Portable 386, Toshiba's '386-powered T5100, and the eventual winner, the Macintosh II. The Mac II finally delivered the sort of power machine which Apple promised with 1984's hapless winner, the Lisa. The software award again went to a desktop publishing package – this time it was Xerox's Ventura Publisher.

Toshiba took out the hardware category two years in a row, in 1989 and 1990, after making the finals at least every second year since the awards' inception, for the T5200, and the T3200SX, respectively. The software awards for these last two years went to Wingz, the Mac spreadsheet, and last year to Hewlett-Packard's NewWave operating environment.

complete solution to a number of networking 'problems' TurboTerm is a hardware independent method of linking PCs to LANs and mainframes. It is memory resident and allows background file transfers either as straight ASCII or using the Kermit protocol with error checking. TurboSoft is a memory resident communications program for linking remote PCs to a LAN or mainframe, allowing applications to be run over the connection with a proprietary sliding window protocol that ensures error free transmissions. A very useful feature of TurboSoft is its ability to operate terminal emulation cards remotely.

But – the product that really captured our attention this year was Talking Windows from the Corporate WorkGroup, to which we awarded the 1991 Commendation for Australian Software. It runs under Windows with full support for that environment, including dynamic data exchange – the use for this that has caught on in the financial world is to automatically update an Excel spreadsheet with commodity prices from all over the world as the various exchanges close. The most innovative feature it has, though, is Frozen Windows – this facility freezes a screen, say at the fourth level of a series of menu selections, but keeps it 'live'; the user can then go on to other menus and switch back to the frozen screen with a mouse click without having to go through the menus again.

Talking Windows supports the dual-modes of Telecom's Discovery, 3270 terminal emulation, X.25 LANs and data broadcast. This last-named feature allows data to be broadcast over the television band for receipt by PCs equipped with a television decoder. The incoming data stream can be monitored in the background and data can either be sent to disk for storage or initiate responses to messages by, say, instructing the remote system to dial up the sending system and downloading current inventory status of nominated products. The X.25 version enables up to 256 sessions to be multiplexed, with multiple sessions on a single PC.

The Corporate Workgroup team's ability to so skillfully innovate deserves every encouragement we can offer it.

**Hardware Commendation.** Maestro has always been among the first with state of the art comms products at the right price and its 9600 XR DataFax maintains that tradition. It's a full-featured 9600 baud external modem and fax combination available for PCs and the Macintosh range at a price to suit everyone's pocket. The fax

XCopy commands – it automatically scans files for viruses during copy procedures. Leprechaun has started exporting to the US and we wish them well.

Another local company has taken quite a different approach to protection against viruses. The very successful shareware product, Calmer Utilities, has included an anti-virus module (NBV – Not Born Yesterday) for some time now, but has enhanced it with a commercial hardware add-on called Thunderbyte. It consists of a hardware adapter which plugs between the hard disk and its controller and software which monitors all direct disk accesses, protecting program files and preventing the read-only attribute from being altered. (There was some debate about

whether we should fit this product into the Hardware or Software category, but, in the end, we considered that the software was really the 'operative' half.)

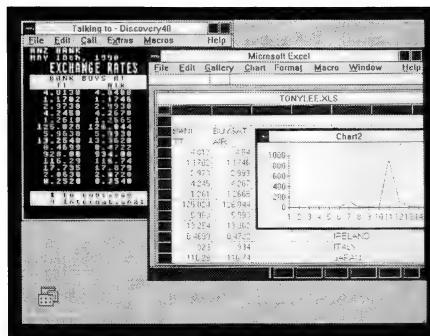
Because of its design, ThunderByte is active before the system boots, giving protection against boot sector viruses. The package protects itself by loading the program code into Rom and only needs 1K of Ram when running. Further security is given by including a password-protect option both for boot-up and access to the floppy drive.

TurboSoft's TurboTerm/TurboSoft combination is closer to the communications mainstream. These are actually two separate products marketed through Com Tech, but in combination they give a fairly



can send and receive in the background and it keeps a log of all transactions and the current status of the faxes. Image files in the TIFF, PCX<sup>®</sup> (on IBMs) and PICT (on Macs) can be transmitted and incoming faxes can be converted to either PCX or TIFF. A very useful feature is that word processed documents can be made to hold their formatting and print styles by using the included print capture utility (on IBMs) or the Control Panel document (on Macs). Bundled with the DataFax is Quick-Link II, a full-featured comms program with mouse support and a built-in editor. The comms program enables faxes to be broadcast to a number of recipients and it has the ability to call a second dialling directory from the first. We are always pleased to see combination hardware like this – the more 'combos' there are, the more we can plug into the limited slots at our disposal; and when they are priced like this unit, the more we can afford.

Advanced Solutions also released a combo during the year which caught our attention: the FaxScan. Since all fax machines have a built-in scanner to convert documents to a digital data stream and since some make it available in an unmodulated form via a serial port on the back of the machine, shouldn't it be possible to capture images on a PC via this port and the PCs own parallel port? The answer is 'yes' and the result was FaxScan, which enables images to be scanned at a resolution of 200 x 400 dots per inch. It gives better results and generally quicker results than any hand scanner we've seen, for the simple reason fax machines have built-in guides that keep the paper straight. If the scanner can take A3 paper, so will FaxScan – that's a feature that's available only with high-end flat-bed scanners. A useful advantage with that is that large images can be scaled



**Talking Windows from the Corporate Workgroup – recipient of the Australian Software Commendation winner for 1991.**

down and the resolution increases in direct proportion to the scaling. It can also be used with OCR software to turn scanned text into ASCII files. It's not the answer for every scanning need, but for simple images with few tones – line drawings in particular – the results are as good as those from dedicated scanners costing two or three times the price of the FaxScan.

On a somewhat different track: what about a modem-controlled power point? That's what the Perth-based Nice Modem Company have developed. The Link Switch solves the problem of having to leave a computer on all the time, while you are away from it because you *might* want to access it. The spike-protected Switch 'sees' that there is an incoming call via the modem and turns the power to the computer on, booting it up. When it boots, a line in the autoexec.bat has the PC check if the modem is on-line. It then fires up either the file transfer software included with the Link Switch or the user's own comms software fires up. When the

modem goes off line, the Link Switch shuts the power down to the PC. So many times I've been working at one place, only to find that a file or program I needed to finish what I was doing was at another and the 'other' machine was powered down – here's the solution. I hope Advanced Solutions are seeking to export the Switch, because, with what seems to be simple modifications, it should be a solid little export earner.

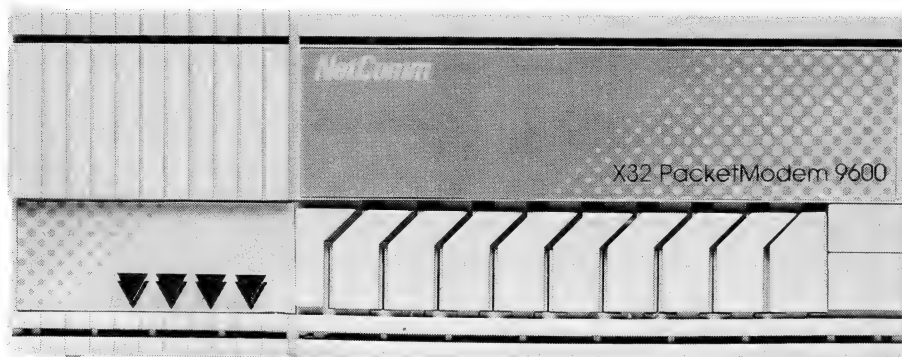
One of the more unusual products to come from an Australian modem manufacturer last year would have to be NetComm's PacketModem. In recognition of companies' need to tie into packet-switching networks, the PacketModem incorporates a V22 bis or V.32 modem, as you would expect, but the difference is that it also incorporates a PAD – a packet assembler-disassembler.

The task of the PAD is to take raw data from the network node, and split it up into packets, with all the proper routing and addressing information, so that they can be injected into the network. Packets coming in to the PAD from the network are then disassembled, and the data put back together in the correct order. The packets are also checked for errors during disassembly, and if a packet arrives with errors, it is requested to be re-sent.

Traditionally, dial-in users of packet-switched networks have relied on the PAD provided by the service provider, in the case of Austpac, this is Telecom. The problem with this approach is that while error-checking is performed within the packet-switching network, the asynchronous dial-up line between the user and the PAD is still susceptible to data corruption.

By placing the PAD in the customer's premises, the telephone line is then included in the error-correcting loop, and effectively becomes part of the packet-switched network itself. By doing this, an error-free link into the packet-switched network is made possible, so that the user is able to take full advantage of the benefits of packet switching.

The PacketModem demonstrates that NetComm is not just a modem manufacturer, but is a true data communications company of international standard. For this reason, we have awarded the NetComm PacketModem the Australian Hardware Commendation. This award makes NetComm the first company since the inception of the Awards to win a second Hardware Commendation; the first was for the original In/Modem in 1985 and the company has reached the finals almost every year since. □



**NetComm's PacketModem – recipient of the Australian Hardware Commendation for 1991.**



# PORTABLE

For the mobile executive who needs to be in constant contact with the office, there is only one solution – take the office along. Mark Cheeseman puts it all together . . .

**I**N A DEPARTURE from our usual annual look at portable computers on their own, this time around we are looking at them in the broader context of the 'portable office'. Of course, our attention will still be focused on the laptops themselves (we are, after all, a computer magazine), but we are also looking at peripherals such as modems, fax cards, and printers, and also at cellular phones and integrated solutions – complete portable offices on a briefcase.

Portable computers have featured regularly in the shortlists for our PC of the Year awards since their inception. This is not surprising considering that the PC industry came into being through miniaturisation of the electronic components that make up computers. As the scale of integration in chips increases, one of the first places that the new technology will appear will be in portable computers, where the designers make every effort to minimise the size and weight of the machines, for the obvious portability reasons.

Laptop computers can be powered either by the mains, in the same way as desktop machines, or by batteries. The latter power source is the one which we will consider for our portable office, since mains power severely restricts the range of locations where the machine can be used.

The problem with battery power, of course, is that they tend to go flat. If ordinary disposable batteries were used, laptop computing would become an expensive exercise. So, rechargeable batteries

are used in all but a few very low-powered machines.

There are two types of rechargeable batteries in common use in portable electronic equipment – lead-acid, and nickel-cadmium. Lead-acid batteries use the same basic chemistry as those found in cars, except that the electrolyte, which is in liquid form in car batteries, is in the form of a gel, from which the name 'gel cell' is derived. This allows the battery to operate independent of physical orientation – a necessity in portable equipment where 'up' and 'down' tend to be rather nebulous concepts at times.

## Power

BY FAR THE most common battery used in laptops is the nickel-cadmium, or NiCad, which is commonly used in all manner of portable electrical equipment, such as shavers, torches, two-way radios, walk-persons and the like. One of the main reasons for their popularity, despite the generally higher cost than lead-acid batteries, is that their terminal voltage is close to that of ordinary carbon-zinc disposable batteries, making substitution of one for the other possible.

The reason that NiCads are popular in laptops is their weight – or lack of it. It's not that they're exactly light, but they are lighter than lead-acid batteries. It is for the same reason that they are the battery of choice for communication satellites, where launch weight is of paramount importance.

However, NiCads possess some properties which make them less than perfect energy storage cells, not the least of which is the so-called memory effect. Put simply, when a NiCad battery is partially discharged and then re-charged, it tends to lose that part of its capacity which was not used. This doesn't happen immediately, but after a few of these charge/partial discharge cycles, the battery's capacity will noticeably diminish. Not that this is a problem while such shallow discharges continue, but when you try to use the rest of its capacity, you could find that it's not there.

The clue to a happy life with NiCads is to use their capacity fully. When you

charge a NiCad battery, make sure that you charge it up fully. Then make sure that it is fully drained before re-charging it. If you have a partially-charged battery and need it to be fully charged, try to discharge it fully before plugging the charger in. The memory effect is at least partially reversible – see this month's 'Tech Tips'.

The other problem with NiCads is that their terminal voltage remains almost constant throughout their discharge cycle, dropping off only at the end of the cycle. This makes it impossible to determine the amount of charge remaining in the battery with a simple voltage measurement. So, to predict the time remaining until a NiCad is flat, some intelligence is required to monitor the times that the battery is charged and discharged. Toshiba has such a circuit in many of its battery-powered machines, although my experiences with my T1000SE suggest that the readings should not be taken at face value, especially if the machine hasn't been used for some time – it tends to underestimate the standby current drain which keeps the memory and Resume feature operating.

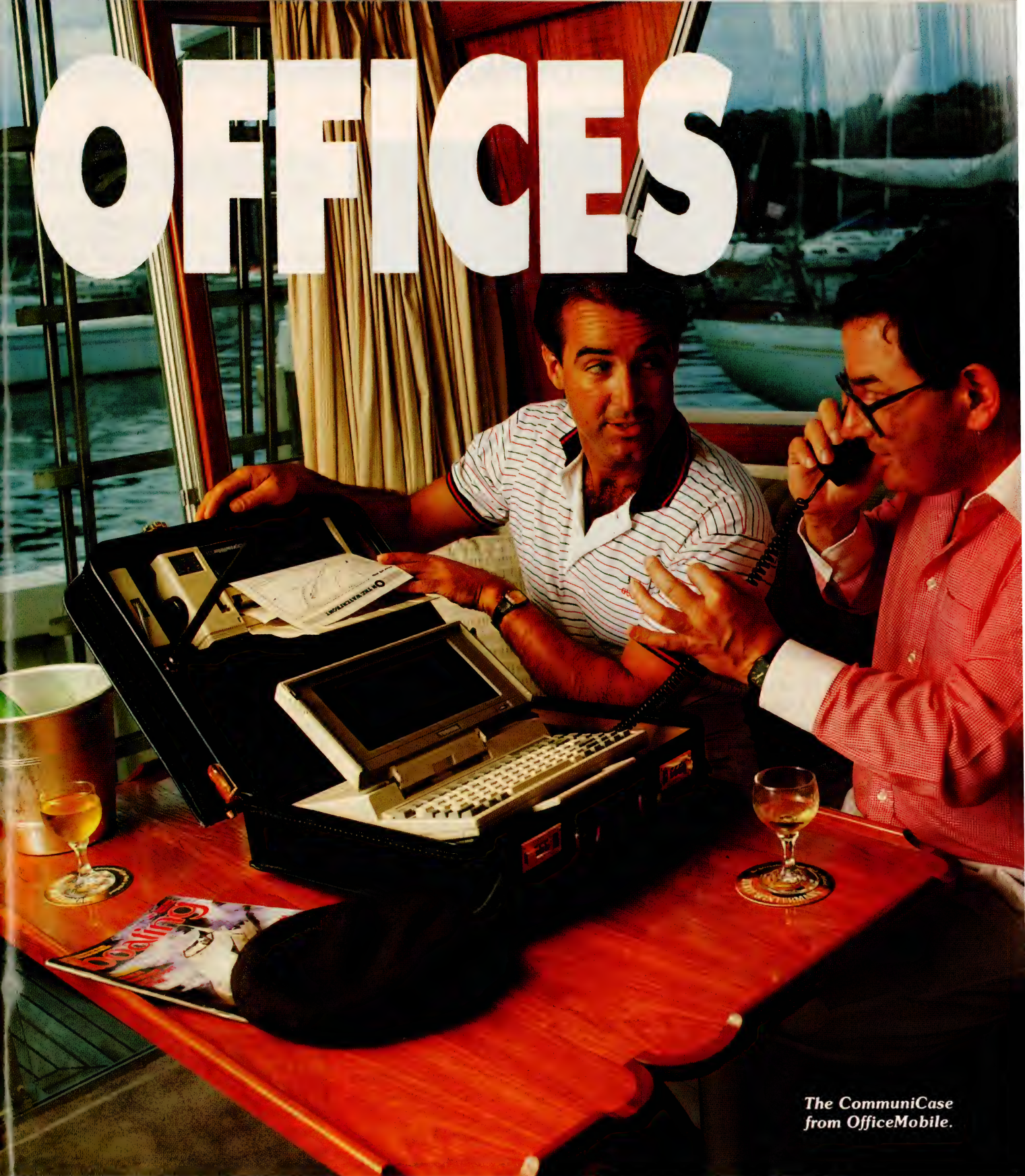
## Disk drives

LAPTOP BATTERY life tends to be in the vicinity of two to four hours per charge, depending on usage. Memory chews up power, so expanding the memory beyond what you need is not a good idea. However, with some machines, you can use the memory above 640K as a ram disk, and do without a hard disk entirely. Toshiba calls this 'hard Ram', and it really makes the hard disk-less T1000SE quite a useful machine. With the maximum of 3Mb of Ram, you have over 2Mb to use as a Ram disk for storing the most-used applications and data. The fact that Dos is in Rom means that a boot disk is not required at all, so you can restrict the use of the floppy drive to the transferring and backing up of data.

If a laptop *does* have a hard disk, then the designers take steps to minimise its power consumption. Small physical size is the first step towards this – 3.5 inch drives are considered large on contemporary laptops; state of the art are 2.5-inch drives (which refers to the profile, not the disk



# OFFICES



*The CommuniCase  
from OfficeMobile.*

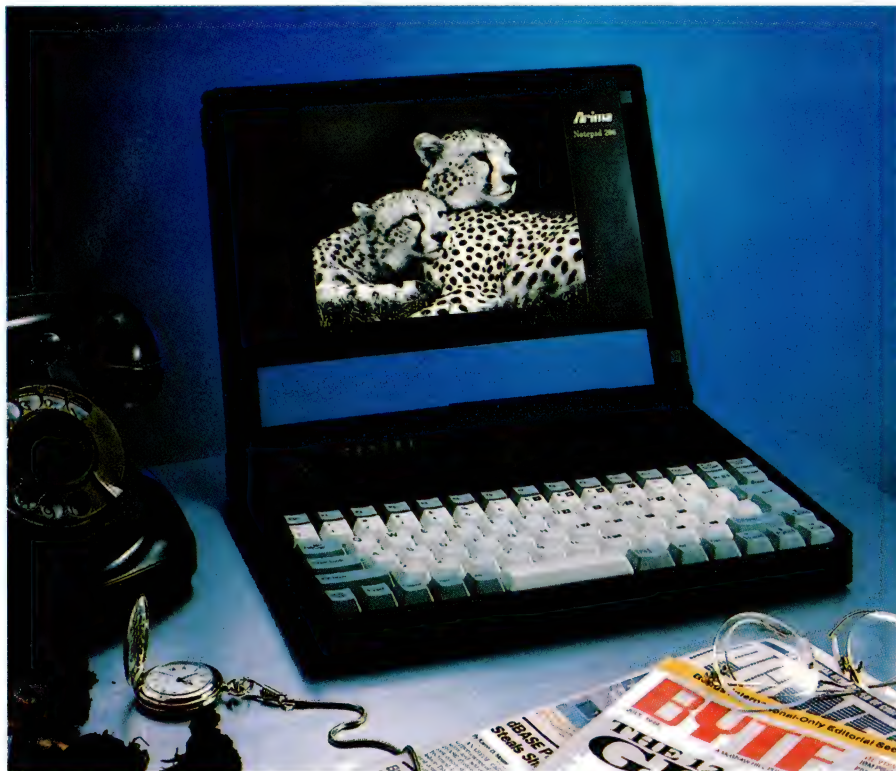
size). Also, most laptops have an activity timer on the hard disk, which powers down the drive motor after a pre-determined period of inactivity. For non disk-intensive applications, setting this time-

out as to as short a period as possible, and saving relatively infrequently, will extend the battery life noticeably. For disk-intensive work, though, the time taken for the drive to spin back up to speed will be-

come a real pain, and if the drive is continually stopping and starting, the power saving, if any, will be minimal.

Floppy drives are standard on almost all laptops, although some of the smaller





*The Notepad 286 is the latest release in the Arima range from Anabelle Bits. It is a 12MHz machine with 2Mb of RAM and a 27ms, 20Mb hard disk as standard. It has a paper-white supertwist EGA screen and an external floppy drive is included in the \$4995 price.*

notebooks can have either a hard disk or a floppy drive, but not both. In machines without a floppy drive, there are two ways to transfer files between the laptop and other machines. One is to use an external floppy drive, a technique often used in machines with 3.5-inch floppy drives, when reading or writing a 5.25-inch disk is required. The other is to use a file transfer utility to transfer the files. Both Toshiba and Sharp have floppy disk-less machines which come with LapLink as standard, although they can also be connected to optional external drives if desired. The Poqet comes with its own program – Poqet Link – which performs much the same function on this machine.

The mutually-exclusive arrangement found with the floppy and hard drives in some machines is not that unusual – three of the machines tested had either a hard disk or a floppy drive, but not both, and one had neither. As the demand for smaller and more portable laptops has increased, designers have been forced to ask the question: 'do we need both in a laptop?' The overwhelming answer seems to be 'no'.

### Hard disks

THE FIRST MS-DOS laptops had a single floppy drive and the fancy ones had two. This situation was not that different from early desktop computers; hard disks were long considered a luxury on personal computers, and when the IBM XT arrived with its 'massive' 10Mb number, the 5.25-inch, full-height profile hardly lent itself to portable applications.

Aside from the size and corresponding weight of the drive, there was its not-insignificant power consumption, due in no small part to the fact that the drive ran continuously, rather than floppy drives which only ran their motors when required. Sensitivity to mechanical jolts also caused some concern, with the possibility of damage to the data, and physical damage to the drive platters and heads themselves.

Users of such hard disk-less machines learned to cope with running software on a floppy-based machine, due in no small part to a ready availability of software which could run on a machine without a hard disk. However, the days of lightweight software seem to be drawing to a

close, with typical software packages needing a hard disk with at least a few megabytes of free space on order to be installed.

However, there still is a place for floppy-only machines, especially if they have a Ram disk in place of a hard disk. My own ever-faithful Toshiba T1000SE has a 384K Ram disk, which is enough to store WordStar 4, and the necessary overlays, as well as SideKick (a pretty old version which doesn't use much Ram), and a few other utilities.

The key to successful use of a Ramdisk is careful choice of what you keep in it, and what stays on floppies. For example, while I keep WordStar in the Ram disk, the number of times I use its configuration utility, Wschange, does not justify putting it there. On the odd occasion that I need to change a Function key setup, the extra time taken in loading it from a floppy is not a major problem. Similarly, Telix, my favourite comms program, stays on the floppy because it won't fit into the Ram disk, and I use it less than WordStar. When I get the memory upgrade, that'll go into the Ram disk as well. (For a detailed description of setting up a Ramdisk, see 'A Ramdisk for Rookies' in our December issue.)

While Ram disks are convenient (and fast!), it is important to keep one thing in mind – Ram is volatile. Remove its power, and it'll forget it ever knew you. So storing



*Lost a fast moving rep? Navstar Australia distributes the XR3 satellite receiver and decoder that can pinpoint a vehicle's location within 15 to 20m, even if it is moving at speeds of up to Mach 2. It's pictured here mounted in the dash with an Epson PC AX '286 fixed to the glove box – a system like this is priced from \$29,000, but Navstar have just released a similar system on a full-length PC board for \$4600. For more information, contact Navstar, (008) 029 948.*



programs and the like on them is fine, since you also have copies on floppy disk. Storing your work files on them (be that documents, databases, or spreadsheets) is another matter entirely.

That said, the only time I've ever lost the data on my T1000SE is when I've let both the main and backup batteries go flat, which is my own fault. However, I still don't store work files in the Ram disk, even temporarily. I like to hear the sound of moving machinery when I hit the 'save' key. Incidentally, saving to floppy is not too slow, when compared to a hard disk with auto power-down.

The other side of the coin are those small notebooks which have a hard disk, but no floppy drive. The obvious solution is an external drive, which all of the manufacturers of these machines supply, either as standard equipment, or more often, as an option. This is the ideal solution from a compatibility point-of-view, since the installation routines which come with most software are designed to install from a floppy disk to a hard disk.

### File transfers

ANOTHER POPULAR solution is to use a file transfer utility to transfer files from a desktop computer (or another laptop with a floppy drive) to the hard disk in the laptop. Of course, this assumes that you already have another computer, and the laptop is your 'second computer'. It also makes no allowance for installation soft-



The Chicony LT5600 is a 16MHz '386SX with 2 serial ports in addition to the parallel port. With 4Mb of Ram and a 40Mb hard disk, a removable keyboard, an external keypad and a 5.25-inch drive it offers a flexible solution for accountants working away from the office. In this configuration, it's priced at \$8268. For more information contact Teco Australia, (02) 725 1233.



*Legend Technologies, (02) 489 3388, manufactures this unit, containing a laptop, 2400bps modem, and Motorola in-car cellular telephone, with modem adapter.*

ware, which assumes that the floppy drive and hard disk are on the same machine.

In cases where you have to install software using a supplied install utility, and cannot just copy files, then you may have to install the software on the desktop machine, and *then* copy the installed software to the laptop's hard disk. However, if the hardware configurations of the two computers are different (especially the display emulations), then you could have problems running the program after you have transferred it to the laptop. If you are asked to specify your computer's hardware configuration, remember to specify the parameters relevant to the laptop. If the installation routine auto-detects the hardware, then you could have problems. Remember too, that a lot of software lets you run the installation program after it has been installed, in order to change system settings, without re-installing the entire package.

If the installation program detects the hardware automatically, and you can't re-configure the software without totally re-installing it, then you will need a device-driver type communications utility, such as that supplied with LapLink III, or Brooklyn Bridge. Using one of these, it is possible to make a floppy drive on another (linked) computer appear as a local drive, and install the software from that drive.

This method has its problems too – you may need to boot both computers up under the same version of Dos to do this, as there are some incompatibilities between hard disk cluster handling under different Dos versions.

If the battery capacity of your chosen laptop is not enough, then the only real solution is to buy a spare battery or two. The larger manufacturers have multiple chargers which can charge two or three batteries out of the computer, and some of these have a 'fast charge' facility, which can completely rejuvenate a spent battery in about an hour or so.

Toshiba has a new type of battery on its T2000SX laptop, using nickel-hydrate technology, which is claimed to have 80 per cent more capacity, weight-for-weight, than NiCads. Battery life is in the vicinity of five hours of continuous use, and doesn't suffer from the memory effect of NiCads. Hopefully we'll see more of this new technology in the near future, since it is the battery capacity which is holding back laptop development more than anything else.

The power supply in a battery-powered laptop serves two purposes – it powers the machine when mains power is available, and also replenishes the battery. Often, battery charging is faster when the laptop is switched off, as the power supply



is often not large enough to power the laptop *and* charge the battery at maximum speed. Most laptop power supplies these days are switch-mode in operation, which results in greater efficiency and lighter weight. It also allows the designers to make the supply cope with supply voltages found anywhere in the world, without having to switch voltages manually, thus preventing the rather embarrassing situation where a 110 volt power supply is plugged into a 240 volt socket.

## I can see clearly now...

LAPTOP SCREENS have taken great strides forward in the last few years, especially liquid-crystal displays (LCDs), which dominate the laptop market. LCD screens are as popular as they are for one simple reason – low power consumption. However, apart from that, early LCDs were almost entirely unsuitable for displaying any complex information in a legible form. They were slow, especially in the cold, the contrast was poor, their viewing angle was very restricted, they could not be easily multiplexed (necessary where large numbers of pixels need to be displayed), and could not be used in dim or dark rooms, since they did not emit any light.



Not everyone needs a full-featured computer while on the move. The Cambridge Z88's built-in software includes a spreadsheet and text editor, a calendar, diary and printer driver editor for customising print jobs. The keyboard is virtually full sized which makes typing easy, although the rubber, moulded keys take getting used to. The Z88 applications are menu driven and there are extensive keyboard shortcuts. The editor displays six lines on the screen and also a miniature representation of the entire page so you can see how much you've written. What can make this machine more flexible than most is that there are both PC and Macintosh connection packages available.

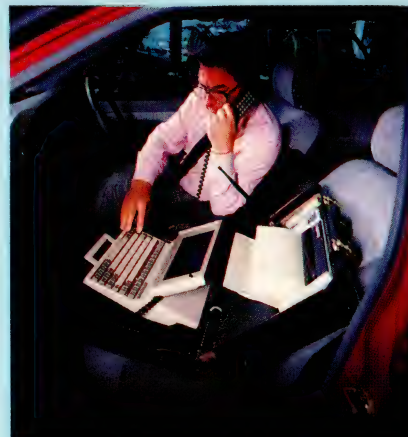
FEATURE: PORTABLE BUSINESS

## Office on wheels

AN EVER-INCREASING number of trucks and commercial travellers' cars are being fitted out with sophisticated electronic gear such as mobile phones, fax machines and computers, aimed at rapidly processing records and keeping in touch with the home base and customers. This all helps to keep the wheels turning profitably.

The office on wheels concept has been taken a step further with CommuniCase, the office in a briefcase from Sydney-based OfficeMobile. It allows you to talk on the phone, access electronic mail, send and receive fax messages, and access databases to provide quotes, process orders, issue invoices, update accounts – everything you need to do to run a business. The cellular phone can be attached to a modem so that information can be fed directly back to the depot or head office.

Each unit is custom configured for the particular needs of the user. In addition to the equipment mentioned above, a printer, a scanner for graphics and text, external hard disks and a mouse can be supplied. 'Prices range from \$7000 to \$17,000,' said Peter Klaiber,



OfficeMobile's managing director, 'depending on the customer's needs. We will help them select appropriate hardware for particular applications and then spend a few hours training new operators with the package.'

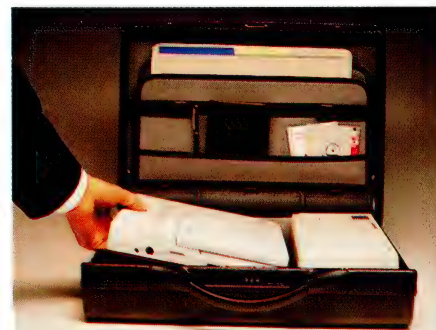
If you'd like to know more, give OfficeMobile a call on (02) 953 0600 or on the mobile (naturally) (018) 22 8941.

– Mark Gibson

Fortunately, none of these problems proved to be insurmountable, at least within the realms of useful compromise. That they did not emit light was the least of designers' problems. They simply replaced the reflective rear surface of the display with a flat light source – commonly an electroluminescent display panel, which emits an even light over its entire surface. This negated the power savings somewhat, although it was still more thrifty on the battery than other display technologies. Apple, being Apple, decided that people didn't need a backlit screen, and would prefer more battery life instead. For Mac Portable users, little clip-on book lights became standard equipment for use in dark hotel rooms.

Probably the biggest breakthrough came with the development of super-twisted displays, a description of which was given in 'Monitors in Focus' last August. It resulted in dramatic improvements in display contrast and viewing angle, to the point that most laptops nowadays have quite legible displays, although some are still better than others. One of the most readable LCDs I've seen comes on Toshiba's T1000SE, which it has been my pleasure to use for several long word processing sessions close to deadline.

The sluggishness of LCDs to change



Toshiba's T1000 range and the Express-Writer 301 are an effective combination for the mobile executive.

state (from bright to dark, or vice-versa) is still a problem, due to the fact that during such a transition 'the physical structure of the liquid crystal changes, and this takes time. This tardiness becomes most obvious when scrolling rapidly through text, or moving a mouse pointer across the screen at even normal mouse speeds. Active matrix displays (as found on the Mac Portable) have improved the response time somewhat, but submarining is still apparent when flicking the pointer from one side of the desktop to the other.



Active matrix displays are the latest development in LCDs, and achieve even higher contrast than super-twisted screens. In an active matrix display, each pixel has its own driving transistor, which controls only that pixel. This gets around the loss of contrast introduced through multiplexing, and allows the display to have as good a contrast as a single pixel.

Toshiba, who can always be counted on to push the limits of laptop technology, recently demonstrated a colour-screen version of its T3200SX machine, using a display developed jointly by Toshiba and IBM. Forget any colour LCDs you've seen to date – this one leaves them for dead. It can display the full palette of VGA colours with a resolution of 640 x 480 pixels. Toshiba expect to be shipping units by February or March, for a cool \$18,000 a piece.

While LCDs have the edge as far as power consumption is concerned, plasma screens have a much higher contrast, and faster response time, making them more suitable for detailed graphical work. However, these machines are almost universally mains-powered, except for Toshiba's T3100SX, but even this machine is a bit heavy for many people's liking.

Not everybody needs a portable printer either, but when you do, there is no substitute. There are printers on the market designed specifically to be portable – Jake reviews three of them later in this issue.

### Portable communications

THE DIFFERENCE between a portable computer and a portable office lies in the ability of the latter to interact with the outside world. Portable modems have been around for quite a few years now, and with the rapid acceptance of fax cards, portable versions of these abound also. In common with such accessories for desktop computers, modems and fax modems for laptops can be either internally-mounted, or can be a separate box plugged into a serial port.

Internal units have the obvious advantage of convenience. They don't take up any extra space in your luggage; you don't have the added hassle of connecting it to the laptop before use – cables are easy to forget when you're in a hurry; and it's one less thing for customs officers in foreign countries to ask awkward questions about. An internal modem also leaves the laptop's serial port free for a mouse, which can be significant now that more and more laptops are capable of running Windows and other graphics applications. Some laptop models get around this by

## Atari Portfolio

ATARI WAS THE first to introduce a hand-held personal computer into Australia. Its most successful product to date in this field is the Portfolio, which weighs about 500 grams, has an in-built QWERTY keyboard, and an 8 line by 40 column LCD display.

Designed for portability, the Atari Portfolio fills a void in the market that lies between the laptop/notebook PCs and the basic electronic calculators and diaries. Although it has been on the market for more than a year, the Portfolio continues to sell well at \$495, having successfully bridged the gap between consumer and business computing.

In essence it is an MS-Dos command-compatible, pocket-sized PC, powered by 3 AA batteries, with the additional features of a personal organiser. While it does not have the power to run a full version of Dos with all of the available shrink-wrap business applications, it can be a valuable tool for business users who do not require full-featured PC applications and are often away from their offices.

Built into the 256K ROM is a suite of application programs, including a word processor, Lotus file-compatible spreadsheet, appointment manager with reminder alarm, calculator, and an address database, to store names, addresses and phone numbers.

Measuring 200 x 100mm, the Portfolio is housed in a robust case and can be stored easily inside a briefcase, without the disadvantage of any noticeable increase in weight.

With the aid of an optional interface and file transfer program, users can transfer files to and from desktop PCs. This means you can download files from their desktop PCs to the Portfolio, for use in the field. Likewise the user may create files of text, spreadsheets, and diary information on the Portfolio, and when the information is no longer needed, transfer it to the desktop for storage.

A real estate salesman needing a reliable diary system may find the Portfolio a

handy tool, as the diary application has features such as automatic daily, monthly, yearly repeat entries and reminder alarms. An optional loan amortisation application would enable the salesman to calculate and offer clients suggested house repayment plans.

Key employees such as production managers, working in large warehouse complexes or multi-warehouse locations, would be able to access job costing information without wasting time walking to and from their office each time data is required. A Lotus 1-2-3 compatible spreadsheet is able to store tailor made formulas. This means that accountants and insurance sellers can offer advice based on information supplied by the Portfolio, when they are away from their offices.

The available applications are further enhanced through the addition of optional software on an upgrade card which fits into the Portfolio's RAM card drive, the equivalent of floppy drive. The card upgrades the Portfolio to a powerful financial calculator, providing financial and statistical calculations for compound interest loans and savings, loan amortisation, leasing, and many others. By means of a parallel interface, information may be printed out directly to a standard parallel printer.

However, the compact size of the Portfolio is not without its disadvantages. The small keyboard enables only slow two-fingered typing. Also, the compactness of the unit has meant that Atari has had to design its memory cards to a credit card size format. According to Atari's price list, a 128K RAM card retails at an expensive \$259.

Atari says that in the near future it plans to release a terminal communications program, which will use the Portfolio serial interface and a pocket modem, to turn it into a portable terminal. This development will mean that mobile business users will be able to communicate with desktop personal computers when outside the office.

—Stan Beers

including two serial ports, although such machines are still very much in the minority.

However, an internal modem will consume power from the laptop's battery, although most modern machines allow you to turn off the modem's power (either manually or automatically) when it is not needed. Of course, if your chosen laptop doesn't have a slot for an internal modem, then you don't have much choice. Also, unless you have a well-known 'brand-

name' laptop, chances are you will be restricted to the manufacturer's own internal modem, which could be somewhat less than state-of-the-art. You can also swap it back and forth between a laptop and a desktop, or keep it for use with a new laptop, should you decide to acquire a new machine sometime in the future.

For integrated fax/modem capability, it's hard to go past the WorldPort range, which includes both internal and external models. The internal fax/modem is suit-



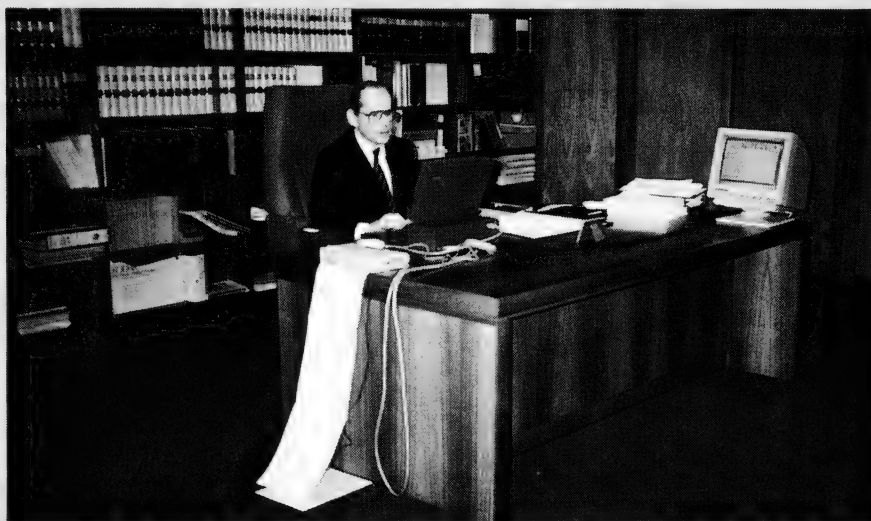
## Computers in the WA Supreme Court

WITH A DRAMATIC leap into twentieth century technology, the Dickensian image of the courts – quills, dusty tomes and a ponderous conservatism – is undergoing a radical change at the Supreme Court of Western Australia. A total of 29 information technology systems will be implemented by the WA Crown Law Department for the courts during the next six years, to help with more effective and efficient use of its resources.

Already judges are using laptops and a recently installed word processing system, to access, amend and produce documents to direct jurors on points of law. During hearings, judges can use the laptops to make notes and read transcripts that may later help to reach a final decision on a case. A leading influence in the new initiatives, The Honourable Justice Paul Seaman of the Supreme Court, has been closely involved in all stages of development.

He became very familiar with computers and their potential when, as Commissioner of the Aboriginal Land Enquiry during 1983 and 1984, he recorded evidence on a computer. His experience, enthusiasm and insight into the computer needs of judges has helped to ensure that the hardware and software selected for Supreme Court judges would be appropriate to their needs. 'Judges should be a major influence in all computer development influencing the administration of justice, and a dominating influence in any affecting the Supreme Court,' said Justice Seaman. 'In this way they maintain judicial control of the trial process and the electronic information upon which the courts are dependent. Unless a project of this sort is run by a judge for the judges it is not likely to develop its true potential. People at the top of any organisation should have their hands on the keyboard. In some courts in other states, judges have been given a laptop and left to get on with it. That is not the way to do it.'

He said the key to any radical organisational changes is the way the changes are introduced and the quality of the training and support. 'The way to start is to train some judges in every court. The Crown Law Department training method of planning and involving the users through projects has been practical, painstaking and very successful. They have a philosophy that whereas hardware and software are important, how you introduce them, train for them and support them, is vital. The judges are very keen, apt and able pupils – all are learning typing skills and they have a clear understanding of the potential of computers. We chose a free-lance trainer very carefully, and the



*I think computerisation has shown that judges, administrators, and court staff are drawn together by the technology. Each has come to appreciate more what the other is doing and morale has improved enormously – WA Supreme Court Justice, Paul Seaman.*

Crown Law Department has a very skilled PC specialist from the information technology branch.'

The Crown Law Department supplies each judge with a Toshiba T5200 laptop with an external colour monitor, a Kodak Diconix 150 Plus personal printer, and the necessary software.

Justice Seaman, as a former Macintosh user, was keen on graphical user interfaces (GUIs) and was one of the beta testers of Word for Windows. Microsoft Windows 3 with Word for Windows 1.1 has become the standard issue for the Supreme Court judges and Masters. This software, combined with the portable hardware, enables judges to have all case notes, schedules and other vital documents with them at home or when hearing cases. 'I make much use of the retrieval and organisational functions offered by Windows 3 and Word For Windows 1.1,' noted Justice Seaman. 'Judges not only need to handle a large number of documents with outlining capabilities, they also need facilities of little interest to average users. For example, from the trial transcript fed straight into the system, I can cut and paste salient points which help with making a judgment. In this way, I can use functions like a sieve, and the use of headings in outline mode allows me to keep track of the thread of the trial.'

'If they wish to, judges will be able to create a sentencing database that will reveal the range of sentencing – they will

be able to look at any individual sentence and its attached remarks.'

'There's been a massive increase in the volume of work through the courts, and without a computerised system it would be very difficult to maintain the speed of justice that has been customary in WA.' Since February last year, the speed of justice has been maintained in the Supreme Court with a computerised listing systems for civil cases. This has helped to avoid court delays, and to respond to rising costs and increasing workloads.

The computerised listing system helps to arrange a schedule of cases for hearing by taking into account such variables as the availability of judges and courtrooms, and estimated length of each case. With the system, vacancies created by out of court settlements can be quickly filled with replacement cases.

'Although fully trained staff make effective use of Oracle to draw up the civil lists, the main handicap at present is insufficient human resources available for the volume of work,' said Justice Seaman. 'It is very unsatisfactory that some staff are having to work excess hours. Without their enthusiasm the court system would flounder. Additional resources are vital for the continued effectiveness of the section. Plans are underway to implement a joint listing directorate in the Supreme Court building for civil and criminal lists.'

– Max Pinner



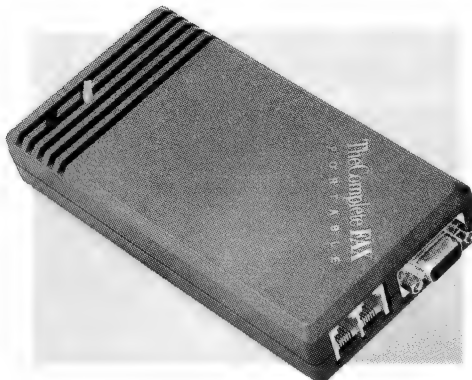
## PORTABLE OFFICE

able for most Toshiba laptops (except the new notebooks), while the external model can be used on any machine equipped with a serial port. Both models support all standard data rates up to 2400bps, and standard Group III fax rates up to 9600bps. WorldPort modems are carried in Australia by Dataplex, on (03) 735 3333, and are priced at \$755.

Faxes and modems are only useful if you have a phone line to connect them to. This is fine if you can get to a telephone when you want to use the modem, or are using your 'portable office' in a hotel room. There is even a push in the United States to have phone jacks installed in public telephones, for uses such as this.

### Total portability

THE ANSWER OF course, is the cellular telephone – with a laptop, modem, and cellular phone you truly have a portable office. Try as we might, we could not locate a portable cellular phone with a modem socket. However, several manufacturers have car-mounted models with a modem socket either as standard equipment, or as an option – Uniden and Motorola are two examples.



*The Complete Fax/Portable is a Group III compatible fax send/receive modem, which connects to any Dos laptop with a serial port, and runs at up to 9600bps. It is distributed by Performance Sales, (02) 906 4900.*

However, this need not restrict you to in-car use – thanks to a neat portable office solution from Legend Technology, (02) 489 3388. Built into a tough ABS carrying case is a Motorola in-car cellular phone with modem interface, a TI000SE laptop with internal 2400bps modem, and a battery to power the phone. Add a fax

modem, and you've got a complete portable office solution.

I tried the system out briefly, although performance wasn't brilliant in our reinforced concrete offices. Modem communications at 1200bps were flawless, as was fax sending and receiving. However, for reliable 2400bps modem use, a clear path to the cellular base station is a must. Operation from a mobile vehicle is not recommended for the same reason – you should be concentrating on driving anyhow. This was a prototype unit and Legend hadn't yet set a price.

Currently, the internal battery only powers the phone, but it is envisaged that future versions will also power the laptop from this battery. The battery charger was also a conventional transformer-rectifier arrangement, which adds weight to what is already not a light beast. A switch mode supply would lighten things up a bit, although the battery and the phone's own RF unit (which is designed for in-car mounting) are the major contributors to the weight.

The only other problem worth mentioning concerned automatic dialling with the modem or fax. Seven-digit numbers

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## And the future . .

BY FAR THE MOST successful player in the laptop, portable and notebook market is Toshiba (which won our Computer of the Year award in 1989 and 1990). So who better than Kim Hamilton, Toshiba's general manager for Information Systems, to ask about the rise of the laptop and the future of the portable office?

*Kim, why are portables enjoying such great success at the moment?*

Everybody seems amazed that portables are suddenly taking over the universe. It seems to have happened very quickly. Late last year we became the number one Dos vendor for Australia – that's pretty dramatic, seeing we only sell laptops. The other thing that's happened is that over 50 per cent of all PCs sold in Japan are now laptops. And that's not surprising. When desktop PC's came out ten years ago, they took off for one reason. People wanted more personal control over computing.

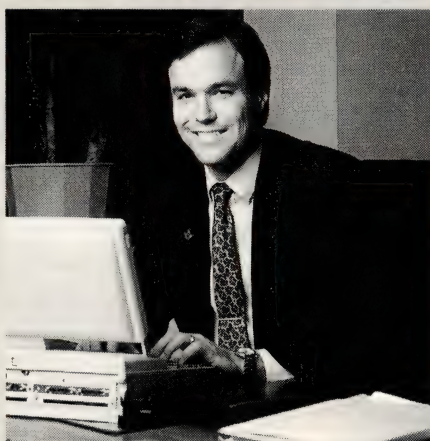
Everyone depends on their PCs. We can't afford to have it sit on a desk without being able to take it home on the weekend. For example, we take my portable into meetings to do our ordering from Tokyo. It's projected up on a screen, and we can instantly say, 'What is the result of dropping our units ordered for that product? How does that affect our total sales and inventory?' People use their machines a lot more now.

*What exactly is a portable office?*

My portable office is what you see here. I don't need a printer because I only print here in the office, so it's a laptop only. Other people may need a printer.

The auditors at the Tax Department use Toshiba 3200's exclusively. What's their definition of a portable office? It's a T3200 with a modem and an encryption board. They send client information across communications lines to head office, and it must be secured, so they need an encryption device. They have spreadsheet templates for analysing a business, and can ask questions immediately because they get updates on what the information means to the overall equation. Once it's final, they send it down.

What's the version of a portable office to CML? They've purchased 950 T1200XE laptops from us over the last three months. Their salesmen go out



*The most remarkable development I've seen in the corporate computer market was last month when one of our clients decided to buy only portables in the future. They won't buy desktops to replace outmoded desktops – Kim Hamilton, general manager, Toshiba Information Systems.*

with a portable printer. They talk to people about their business and what insurance CML offers. The salesmen can print out a policy and get them to sign it then and there. This means they don't have to come back a second time for signatures.

So a portable office depends on how you're using portables.

*When will we stop seeing price penalties for the luxury of being able to cart your computer around?*

Never. For a start, I think the terms 'laptop' and 'desktop' will disappear in the next five years – everything will be a portable in one form or another. Where there is a significant price penalty now, it will become smaller as volumes build. There's two reasons why the price difference will always be there, however. You need a much more rugged box and much more rugged technology to get the same effect with laptops, such as shock mounted disk drives and that costs more. You will always be able to get the technology cheaper in a big box with a lot of air in it.

The other thing is you're always going to get smaller and smaller products, down to a certain size. The T1000SE is the maximum shrinking you'll get for an acceptable laptop. The

keyboard's right, it feels good, and the screen is an acceptable size. You'll get more power going into the same size box.

There's this drive to get the weight down, which will never stop. Undoubtedly, you'll get 80586 machines for three kilos. You use the latest technology to do that – the latest memory technology, the latest chip integration. That's why it costs a lot now. You have to build the machine more rugged, and you're using the absolute fringe of technology.

We just released the first 256-colour thin film transistor screen. There's a yield rate in production on that of 2 per cent, because you have a transistor for each pixel. But the effect is stunning: it's better than a VGA monitor, it's better than a television set screen. We've spent hundreds of millions of dollars developing colour for laptops because that's one of the last hold-outs.

The other product we released, the T2000XE, has a new kind of battery called nickel-metal hydride. It allows you five hours of battery life with the same weight as a NiCad. But the technology that goes into producing a brand new battery is very expensive.

*Is the portable office showing up in particular markets?*

The leading edge of acceptance is in government. Twenty nine percent of all PCs sold into government are Toshiba laptops. I think that's because there are a lot of restrictions on government spending. Typing pools and secretarial assistance are going, except at higher echelons. If we put a PC on your desk, only you can use it. If it's a portable, we can give it to someone else if they need to write a memo.

Non-battery-operated portables are still 45 per cent of total units. Most people don't go into the wilds of the outback. They go from one place that has power to another. I think the battery issue is deceptive. People think, 'Aw, you've got to have batteries.' Batteries can be a real pain. You have to lug them around, discharge them, charge them and most users don't need that. There's a lot of hoopla about battery-operated portables, but I think the term 'portability' doesn't necessarily have to include batteries.

– Andrew Einspruch



## WorldPort fax/data modem

NEW DEVELOPMENTS in the design and size of modems have meant that communications between two or more users is now possible within the environment of the portable office. The Touchbase WorldPort 2496 portable fax and data modem allows PCs and fax machines to talk to each other, either from fixed workstations or from on the road.

The WorldPort is both a 9600 bps facsimile and a full-featured 2400 bps modem in one pocket-sized communications centre. Designed for quick 'snap-on' external connections with PC-compatible portables, laptops and desktop computers, the WorldPort 2496 can operate from its own battery or from AC power. No expansion slot is required as it plugs straight into a serial port. This, together with its compact size, makes it ideal for use with laptops. The unit weighs only 213 grams, with dimensions of 25mm x 122mm x 69mm, so it can be easily moved from briefcase to desktop without much bother. While in the office, the unit can be easily moved from desk to desk.

There is an obvious two-fold advantage of the WorldPort's portability. Firstly, users supporting even the most basic laptops without hard drives may now feel more comfortable carrying less data, knowing that information is available to them via fax or a modem, linked to the home office. Likewise any important change in financial information can be transmitted from the field to the main database.

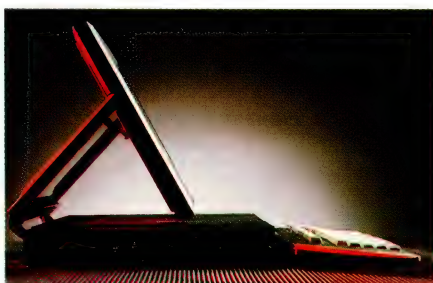
Two standard RJ-11 jacks provide direct connection to the telephone network. In addition, an acoustic coupler adapter enables the WorldPort to be used (with the usual reliability of acoustic couplers) where direct connections aren't available, such as public phones and hotel rooms.

To send a fax with the WorldPort, the user creates a fax message using a word processor, and then saves it in ASCII format. From the main menu within the WorldPort software, an individual or group of recipients from the built-in phone book can be selected. An option is also available for the creation of fax cover sheets.

Outgoing faxes can be scheduled for immediate or delayed transmission, to take advantage of lower overnight telephone charges. A background mode allows incoming fax and data calls to be automatically detected and routed while the PC is being used for other purposes. Received faxes can be printed on Epson or Hewlett-Packard LaserJet compatible printers.

The trend for people in business is to become more self-sufficient whilst away from the main office. Like the cellular phone, the WorldPort portable fax/modem allows the mobile user to be linked to the world of information regardless of where the base is located. It's available from Dataplex, (03) 735 3333, for \$755.

—Stan Beers



Computer CD-ROM users are no longer restricted to working in the office. French company SMT Goupil have released two new versions of their innovative Golf series of portables and one of them has a built-in CD-ROM drive. The 16MHz Golf SX (pictured) has a separate 102-key keyboard, a 40Mb hard disk, 1Mb of Ram and two expansion slots; it is bundled with a Super-VGA monitor for \$5395. The second model adds a 540Mb CD-ROM drive and is priced at \$9550. Further details can be had from the distributor, Quartz, on (03) 663 6509.

worked fine, but anything longer would give the phone a mild coronary, resulting in a busy signal. Manual dialling from the phone's own keypad seemed to be the only solution.

Another similar solution is the Commu-niCase from OfficeMobile – see the 'Office on wheels' box item.

Admittedly, these portable office solutions are considerably more bulky than just a laptop alone, but then they are also designed for a specific market niche – the person whose travel is restricted to the city areas, and who needs to stay in touch at all times. For most of us, it is enough to carry the computer and modem, and let the hotel (or Telecom) supply the phone.

How far you go with your portable office depends largely on what you need from it. A portable office for a metropolitan sales representative travelling by car will differ greatly from that of somebody travelling interstate or overseas by air. The decision



State of the art in laptop screens is Toshiba's colour active-matrix VGA display in its T3200SXC – a T5200 with an even better colour screen is on its way.

as to whether you need to carry a portable phone or printer will depend on your intended use, but will make a major impact on the size and weight of your baggage. □

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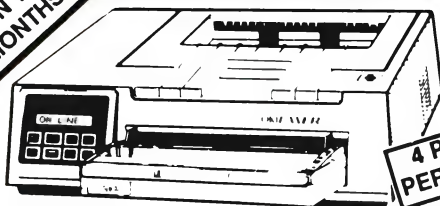


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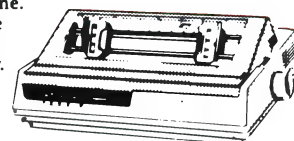
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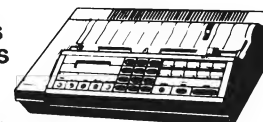
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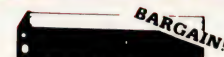
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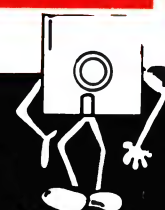
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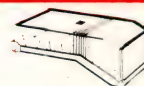
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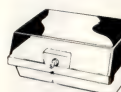
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**FEATURE: PORTABLE BUSINESS**

# A PORTABLE MIXED SIX.



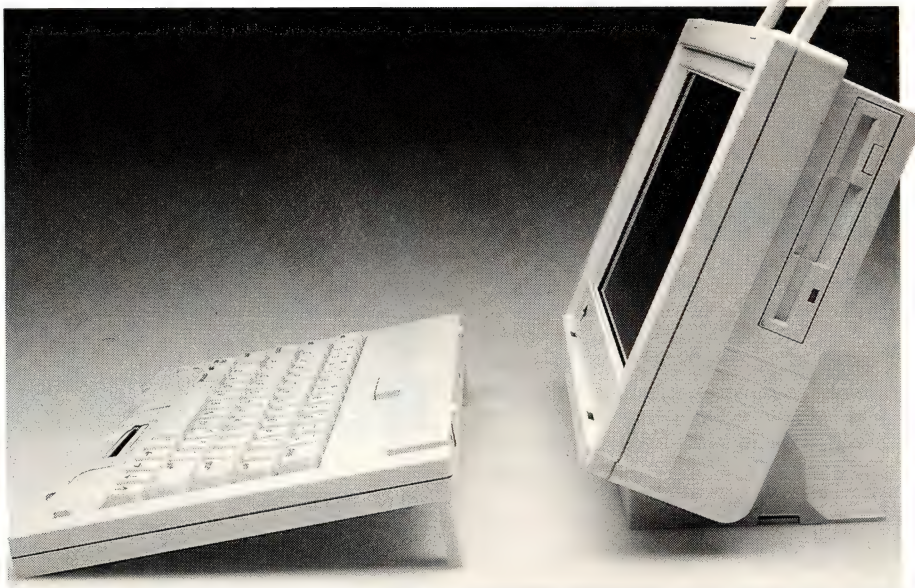
The heart of the portable office is the portable computer, of course. Mark Cheeseman put six different interpretations of 'portable' through their paces and found combinations to suit anyone on the move.

**I** ALWAYS ENJOY laptop features, and the opportunity to check out the latest offerings in the portable computer market. So often, these machines are close to the leading edge of computer technology, pushing miniaturisation and power saving to the limit, within the bounds of usability.

The machines which I looked at during the course of putting this feature together ranged from the tiny hand-held Poqet, with its CMOS 8088 processor, up to the '386SX-based Compaq and Renard machines. In between were the Toshiba T1000SE, Sharp's PC-6200 '286 notebook, and the odd-one out, the Outbound Mac-compatible.

## Outbound Mac-compatible

THIS MACHINE IS certainly the most unusual, being the only non-Dos machine in this year's line-up. The company who developed it used to call itself Wallaby Systems, which explains the rather Australian-looking logo on its fascia (the company is actually American). Inside, it contains a 68000 processor running at 15MHz, up to 4Mb of system Ram, a floppy drive or a hard disk, and an optional Ram disk of up to 16Mb.



Of course, Mac compatibles aren't exactly thick on the ground, due in no small part to the way in which Apple reacted to the Apple II clones, in the days when the Apple was the machine to clone. While reports abound about machines which can emulate the Mac, the sticking point has always been the software – in the form of the Mac Roms. Outbound has got around this problem in the same way as other successful Mac cloners, by selling the machines sans Roms, and leaving it up to the user to pinch the Roms from another (real) Mac. Currently the Outbound will work with Mac Plus or SE Roms, which are no longer current models, but it is envisaged that a Classic-compatible version will be available 'real soon now'.

This sort of behaviour tends to leave one with a perfectly usable portable Mac clone, and a perfectly unusable real Mac, with a missing set of Rom chips. However, the Outbound has a rather clever solution to this problem, which doesn't infringe upon Apple's license on the Roms, but which allows both machines to be used (although not independently).

The secret lies in Outbound's docking adapter, which connects the Outbound to the now Rom-less Mac. The Roms are transferred to the Outbound, so that the Outbound becomes a fully-featured Mac with legal Roms, while the victim Plus or SE can no longer be used independently, although when attached

to the Outbound's docking adapter, both machines then act as one, with the memory and disk storage capacities of both being accessible.

The Outbound which *Your Computer* tried out was just a stand-alone unit, without a docking adapter, using Roms from an SE (which is now no doubt sitting gathering dust somewhere in a dark corner of the distributor's warehouse). All software I threw at it worked flawlessly, including MS Word, Hypercard, PageMaker, SuperPaint, and countless others. To all intents and purposes, the Outbound performed exactly the same as a Mac SE, although considerably faster.

## Power source

POWER FOR THE Outbound is derived from a lead-acid battery, in common the 'real' Mac Portable. This allows more accurate monitoring of the state of charge of the battery, and avoids the memory problems of NiCads. The machine I tested was a floppy-based model with a 16Mb Ram disk. While this sized Ram disk consumed about as much battery power as a real hard disk, it is much less fragile (provided you keep it powered up), and a lot faster. The backlit display also consumes a lot more power than Apple's unlit number, but the legibility is streets ahead as a result, especially in marginal lighting conditions. Submarining of the cursor is not as noticeable as on the Mac Portable, due no doubt to the higher screen contrast assisting location of the pointer after it has moved.

The Outbound is also constructed

# PACK



rather differently than most other machines – more along the lines of a lunch box type machine than the clam-shell construction of most laptops. The system is housed in the main case behind the screen, with a tiltable foot acting as the base. The latter houses the battery, for stability. The keyboard is a separate unit, connected to the system unit by nothing more substantial than an infra-red link. The keyboard has a range of a couple of metres, certainly further away than you can sit and still see writing on the screen.

The keyboard can be docked to the system unit, and the combined assembly used as a conventional laptop. This sounds a bit unwieldy, but in reality, the unit is quite stable to use in this configuration.

### The IsoPoint

ANY MAC WOULD be unusable without a mouse, or some other pointing device, and the Outbound's substitute is a thing called an IsoPoint. This resembles a thin pencil, mounted horizontally in an assembly under the space bar. Rolling the pencil moves the mouse pointer vertically, while moving a slider from side to side translates to horizontal movement of the cursor. Depressing the entire assembly is equivalent to pressing the mouse button.

Personally I found the IsoPoint a little awkward to use, more so than the traditional mouse, or the trackball in the Mac Portable. Admittedly, it occupies more space than either of these solutions, but I still found myself coming back to the mouse, even if I had to use it on my lap, or on an armrest. A modified Microsoft mouse is supplied with the Outbound, chosen for its low power consumption and solid construction.

Battery life is not quite in the league of the Mac (neither is the weight), being about four hours of continuous use, but longer than some of the other laptops tested in this issue. The battery is easily removable, and it would not be difficult to carry a spare or two. Input-output ports are pretty much the same as those found on the Mac, with two serial ports, and a special socket which can be converted (with a suitable adapter) to a SCSI port.

The SCSI port is unusual in that the Outbound can not only act as the master, but also as a slave device. In this configuration, selected Outbound drives can be made to appear as devices on the desktop of a connected Mac, for ease of file transfer. This makes the machine ideal for a consultant, who can install and configure software on the Outbound, carry it bodily

to the client's office, and then simply copy it onto their hard disk, ready to run.

This special port is also where the docking adapter attaches, allowing the Outbound and the 'host' Mac to act as one, when connected together. The docking adapter itself is installed by the dealer in the host Mac, after the Roms have been removed.

The Outbound Laptop is distributed by Allaw, (02) 415 9111, and is priced from \$4300.

## Compaq and Renard

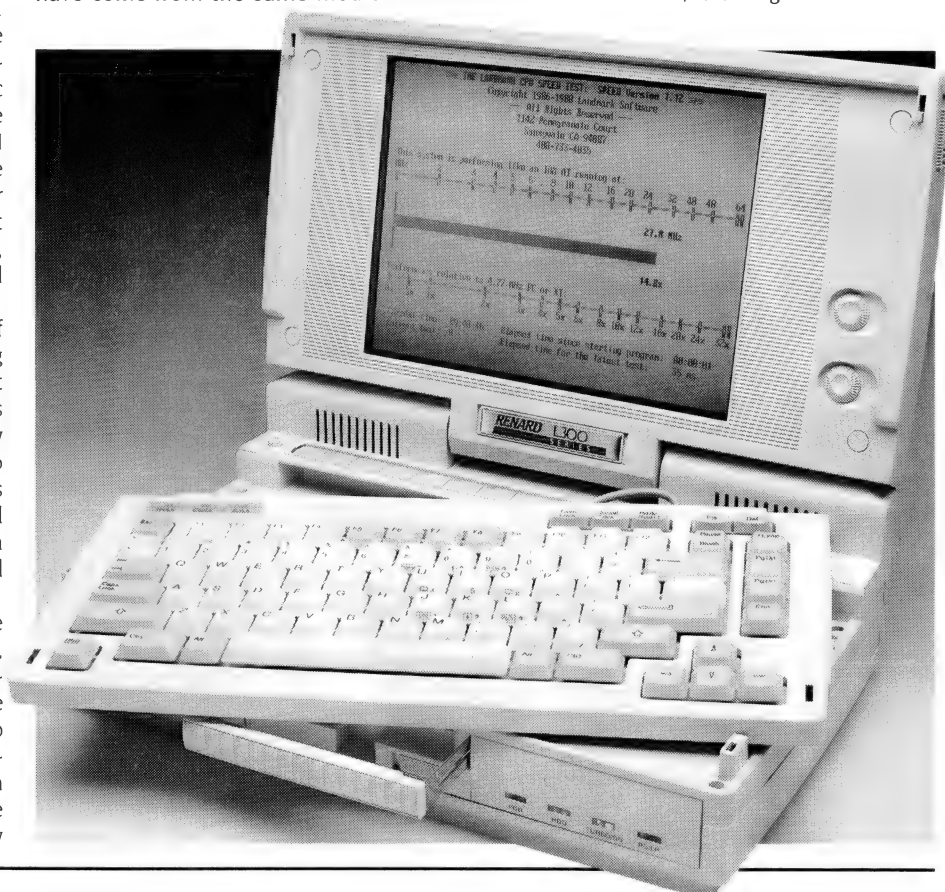
THESE TWO MACHINES in the six-pack are so alike that it's necessary to discuss them together. The Compaq SLT 386s/20 looks identical to its similarly-named stable mates, but with a greatly re-vamped interior. Sporting a 20MHz '386SX processor, it is as close to a battery-powered 'power machine' as you're going to get. The Renard L300 also has the same basic appearance as the Compaq, being the same physical size, and having the same basic layout (floppy drive front-left, hard drive front-right, removable keyboard, and so on) and with a case that could almost have come from the same mould.

The 2Mb of Ram in both machines means it is capable of running Windows in Enhanced mode, and the VGA-emulating LCD ensures an appropriately high-resolution display, although it lacks some of the contrast of a conventional cathode-ray tube, of course. However, with GUI interfaces, and Windows in particular, becoming more the norm rather than the exception, this sort of power and display resolution is becoming more important than ever in a laptop.

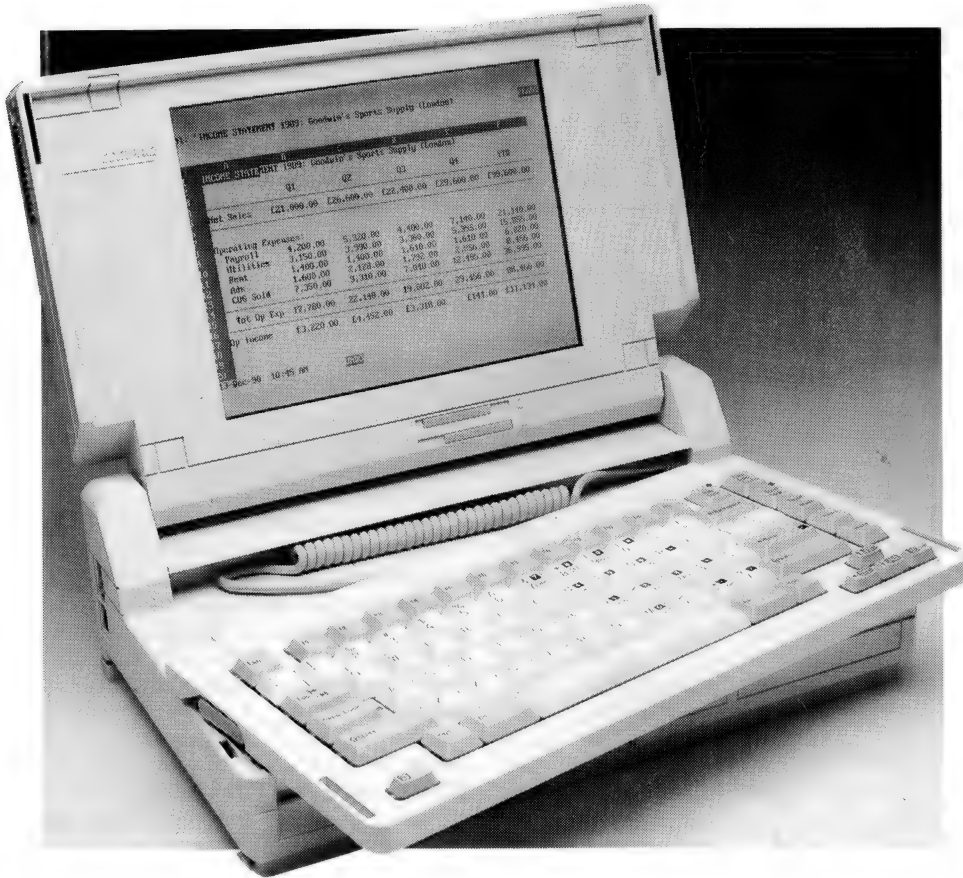
The Compaq and Renard were the only ones evaluated which had both a hard disk *and* a floppy drive. Mind you, they also sported larger enclosures than any of the others, and higher all-up weight. The Compaq has a speedy 60Mb hard disk, with a 24ms average access time (according to CoreTest), and a data transfer rate of over 1Mb per second – that's one fast drive. The drive in the Renard was no slouch either, with a figure of 18.6ms and an identical data transfer rate; it has an extra 40Mb of capacity to boot. CPU benchmarks for the two machines were essentially identical, with both models posting a Landmark speed of about 28MHz.

### The keyboards

THE KEYBOARD LAYOUTS of the two were similar too, although I found the







location of the Control keys rather annoying, not being directly below the Shift keys. I tended to keep hitting the Fn key (used to toggle the keypad) instead of the Control key, with rather annoying consequences when used in conjunction with the arrow keys. The Compaq keyboard had the typical smooth, yet positive feel common to all Compaq keyboards, while that on the Renard felt a touch rattle-y, although not severely so. However, the Renard had the Page Up and Page Down keys on separate key tops, while on the Compaq, they shared keys with the up and down arrows.

Both machines also have PS/2-style keyboard sockets on the rear panel, but the Renard's standard keyboard was connected with a plug and socket, permitting the use of an extension cable if desired. Both had standard serial and parallel ports, in addition to an external floppy drive port, and a rather large expansion connector. The mutual resemblance of the two even extended to almost identical power supplies, connected to their respective system units by identical six-pin cables, charging identical NiCad batteries located under the removable keyboard between the two disk drives.

The screen appearance of both was

similar, although the screen fonts had slightly different appearances – the Compaq font looked like a standard VGA font, while that on the Renard looked somewhat more blocky, reminiscent of typical EGA fonts. A small point, perhaps, but with machines this similar but with such disparate prices, it's worth noting even the small differences.

The Compaq SLT 386/20s is priced at

\$9738 as tested, and is distributed by Compaq Australia, on (02) 660 0077. Renard is handled in Australia by Veridata, (03) 417 7055, and the L300 is priced at \$5700, in the configuration tested.

## Poqet PC

BY FAR THE smallest machine I looked at this time around, was the Poqet (pronounced naturally enough as 'pocket'). Only slightly larger than a VHS video cassette, the Poqet sports a CMOS 8086 processor, complete with 512K of system Ram, Dos 3.30 in Rom, and no disk drives. That, and the fact that the display is not backlit, provide a massive saving in battery consumption, allowing the Poqet to operate for a claimed 100 hours from only two alkaline AA cells.

The keyboard is rather small, as would be expected in a machine this size, making touch-typing somewhat difficult. However, the keys are real keys, which move when depressed, so there is at least some tactile feedback. The screen is also small, but it displays a full 80 x 25 screen of text capably, although the lack of backlighting makes reading difficult in marginal lighting conditions. One annoying trait of the screen was its noticeable 'flicker' when being updated, reminiscent of some older CGA cards without dual-port Ram, so that when the main processor is accessing the display memory, the display controller is forcibly disconnected.

## Storage capacity

FOR MASS STORAGE, there are several options, depending upon your require-





ments. There are a pair of card sockets, one on each side of the keyboard, which act as virtual disk drives, and which can accept a variety of plug-in cards. Ram cards behave as ordinary floppies, with various capacities up to 2Mb. A built-in battery prevents silicon amnesia when the cards are removed from the computer.

Rom cards come pre-programmed with various pieces of software, such as Lotus 1-2-3, LotusWorks, WordPerfect, XyWrite, to name but a few. These cards are read-only (and non-volatile), which has the added benefit of protecting the software against virus attacks.

The other two types of cards are Flash Cards, and OTP (one-time programmable) cards. Both of these are read-only, as far as the Poqet is concerned, but can be read and written by a 'PC Card Drive', attached to a desktop PC. OTP cards can only be written to once, so it's a good idea to get it right the first time. They come in 512K, 1Mb or 2Mb sizes, and are designed for low-volume software distribution. The Flash Cards are available in 1- and 4Mb sizes, and can be re-written many times, although only on the PC – the Poqet sees them as read-only. The PC drive can also read and write Ram cards, for more regular use.

If you need to use standard media with the Poqet, then there is an external 2.5-inch disk drive, which is in a case approximately the same size as the Poqet, and powered by its own four AA cells. This attaches to the expansion connector on the rear apron of the Poqet, and also provides a standard 9-pin serial port. The drive can read, write, and format 720K and 1.44Mb disks, which are of course fully Dos-compatible. Other cables which can be connected to the expansion port (one at a time, in lieu of the floppy drive) are a serial port, parallel port, and a PoqetLink cable, which is a LapLink-style file transfer utility. The latter adapter is included as standard equipment with the Poqet PC.

Software compatibility was not perfect, which is rather unusual these days. Sure, the supplied Lotus 1-2-3 Rom card worked without a hitch, as did Norton's Sysinfo version 4.0. However, version 5.0 of that program would abort with a divide-by-zero error. Laplink III would run, but refused to transfer any files, even when slowed down to 9600 baud. The Landmark CPU speed test also gave erroneous results, claiming a clock speed equivalent to 100MHz. WordStar 4.0 also ran fine, as did dBase III plus.

The Poqet PC is priced at \$2995, and is distributed by Legend Technologies, on

(02) 489 3388, while the external floppy drive costs \$690. An alternate source in Melbourne is Atlantis International, (03) 277 3139.

## Sharp PC-6200

THE PC-6200 WAS the only machine I looked at which was equipped with a hard disk but no floppy drive, although it is by no means the only such machine on the market. So how does one get software into the computer in the first place? For starters, Dos 4 is included in Rom, and a special installation routine runs when the machine is first powered-up, installing it on the built-in 20Mb hard disk.

### LapLink

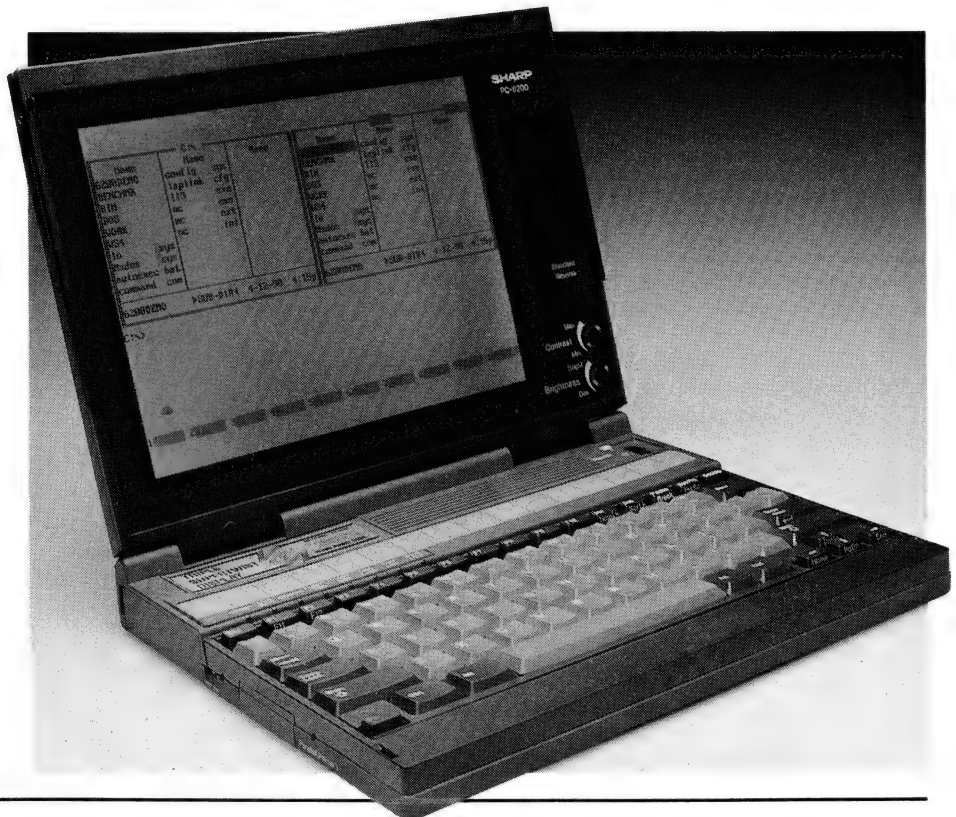
TO INSTALL OTHER software on the hard disk, and to transfer data to and from the laptop, Sharp has thoughtfully bundled LapLink with the machine, which can be used either as a file-transfer utility, or as a device driver, to make a remote floppy drive accessible to the Sharp. The use of LapLink of course, assumes that you have ready access to another computer. If you don't, Sharp has an optional external floppy drive, which can be connected for occasions when it is required, while not contributing to size and weight of the machine at other times.

The screen of the Sharp was nice and large, and had good contrast from top to bottom, making it slightly better than the T1000SE, which tends to lose contrast at the top and bottom edges of the display. A connector to the right of the keyboard allows for a keypad to be attached, while another on the other side of the case is a miniature parallel port – an adapter is supplied to convert it to a standard DB-25, but one wonders why Sharp doesn't just build the standard socket into the machine itself. These two ports, and a standard 9-pin serial port, are covered by little protective dust covers, which detach when the ports are in use (and which I would no doubt lose rather quickly if the machine were mine).

Under a similar cover on the rear of the enclosure is a proprietary expansion port, and there is room inside the case for an internal modem or fax/modem card. Battery life was found to be 2.5 to 3 hours, with fairly frequent use of the hard disk. There is also provision for an external battery pack.

### Hard disk

PORTABILITY DOES not appear to have called for any compromise in the performance area. Coretest reported an average access time of 22ms, with a data transfer rate of 633Kps. The Landmark speed test returned an equivalent speed of 11.7MHz,





which, while not blindingly fast, probably helps save some power.

As you would expect in a notebook, the keyboard has a double function, through the use of an Fn key. The four cursor arrows were present in miniaturised form, while the Home, End, Page Up, and Page Down functions were accessed by pressing the Fn key and one of the arrows. The Insert and Delete keys joined the Function keys along the top row, but in order to fit them all in, the keys have been compressed to about 90 per cent of full size horizontally, making their use a little fiddly. The location of the Control keys is the same as on the Compaq and Renard machines – not quite directly below the Shift keys, with the Fn key where the left-hand Control key would normally be.

The Sharp machine not only comes with Dos 4.01, but also a custom version of LapLink, and its own LapLink cable. Sharp obviously intend this machine to be used in conjunction with another desktop machine, although an external floppy drive is available for truly independent use. The LapLink package also includes a device driver, so that a remote floppy drive can be made to appear as a local drive for installing software.

The Sharp certainly created quite an impression around the office, with its diminutive size and respectable performance. I virtually had to lever it out of Jake's clutches in order to review it. *(I wasn't the only one struck by it: our administration and MIS managers have now bought one for themselves – Jake.)* As an all-round performer it is hard to beat.

### Toshiba T1000SE

I HAVE TO admit from the outset that Toshiba's T1000SE has an unfair advantage here, since I have been regularly using one for more than 12 months.

The 1000SE, in its basic form is an XT-clone, with 1Mb of Ram and a 1.44Mb floppy drive. No hard disk is present, nor is one available as an option. So how does a computer journo who lusts after all things fast and powerful cope with a machine without a hard disk?

Quite well, as it turned out. I generally use this machine as my portable word processor, running WordStar (for largely historical reasons), which fits quite nicely in the 384K Ram disk left over after the 640K of system Ram is taken from the 1Mb total in the machine. The key to using machines without a hard disk is to carefully evaluate your needs for disk space, and



only put necessary programs and files in the Ram disk.

The T1000SE also has a memory expansion slot, into which can be inserted a Ram card of 1- or 2Mb capacity, bringing the total Ram complement of the machine up to 3Mb. There is also room for an internal 2400bps modem, which is designed and manufactured in Australia by NetComm. Power is supplied by a removable NiCad battery, which gives about 2.5hr continuous use between re-charges.

The screen is a backlit LCD, with a resolution of 640 x 400 pixels – double that of the CGA adapter, which it emulates, resulting in characters of similar quality to VGA displays. A standard serial port is included, and the parallel port, in common with most Toshiba models, serves double duty as an external disk drive port, for a 5.25 inch drive.

#### Auto-Resume

ONE FEATURE UNIQUE to Toshiba is Auto-Resume, which allows most of the system to be powered-down, while maintaining the contents of the memory and registers in the CPU. When the power switch is pressed again, the computer powers up in exactly the same state as it was left.

For those applications where a hard disk can be considered more of a luxury than a necessity, the T1000SE is perfectly

suited. The absence of a hard disk also makes the machine more rugged, and less thirsty on electrons.

The T1000SE is priced at \$2499. For more information contact Toshiba, (02) 887 3322.

#### Decisions, decisions...

IT IS DIFFICULT to make any conclusions from the above analysis, not that that was our intention. Rather, we have endeavoured to provide a representative cross-section of the laptop market. Comparing such obviously diverse machines (with the exception of the Renard and Compaq machines) would be unrealistic, and not very useful.

It is really a case of deciding what you consider most important in a laptop – portability, storage capacity, ease of data exchange, initial cost – and then evaluating the features of as many laptops which meet (or nearly meet) your chosen criteria. If you are looking for a portable word processor, then the Compaq or Renard would definitely be overkill. On the other hand, if you need to run Windows, or other heavy-duty applications, then a floppy-based laptop with an 8086 processor would not be the way to go. For many, the Sharp would be a good all-round choice, especially if you have a desktop machine as well. If you want a Mac, then there's only the Outbound and Apple's own portable. □



# PRINTING ON THE MOVE

Printers have shrunk almost in proportion to PCs in the last few years. There are now a number of offerings that fit neatly into a standard briefcase and are about the same weight as a notebook. But, there's quite a variation in the technology and quality of printing, as Jake Kennedy found when evaluating Kodak's Diconix, Toshiba's ExpressWriter and Canon's baby bubble jet.



**A**LL THAT THE three printers we chose to evaluate for our 'portable office' feature have in common is that they will sit quite comfortably in a standard-sized brief case. The Diconix is an ink-jet, the ExpressWriter is a thermal printer and the BJ-10e is a bubble-jet. I tried the three with a variety of software and had no problems after setting up the software. All the packages I tried with the printers had at least one emulation that suited – the packages included 1-2-3 v2.2, Harvard Graphics, Advanced Revelation, WordStar 4 and dBase III+. All three printers come with a 12-month warranty and all prices mentioned are taxed.

## Diconix 150 Plus

KODAK'S DICONIX 150 Plus is a drop-on-demand ink jet with 12 nozzles and a built-in tractor feed for continuous paper. At 51 x 274 x 165mm and 1.7kg, it's about

as small as a printer can get. The size is limited by the width of an A4 sheet of paper and the diameter of the rechargeable size C batteries it uses – five of them fit neatly inside the platen. On power up, it does a quick check on itself, wipes the head against a pad and is ready to go.

After sitting overnight, the cartridge head was occasionally blocked with dried ink – correcting this was a simple matter of unclipping the cartridge and inserting the end of a straightened paper clip in a hole at the back of the cartridge and giving a gentle push until the ink started to flow (the ink is held in a rubber bag which collapses as it empties).

Recharging the batteries takes about 12hrs. Fully charged, the batteries are good for about 30 pages of 55-line text. I was surprised at how small the print buffer was – 2K – considering the printer was designed for continuous feed.

The paper feed could be improved – it feeds in from the back, around the tractor ribs and out the top – unfortunately with fan-folded paper, the fold on the output sheets tends to catch on the input and get dragged around the platen. This happened with almost every job longer than three or four pages and often made it necessary to babysit the printer. The only way I found around it was to position the printer on



the back edge of my desk and have the paper drop straight down. This is fine in the office, but if you are working from a briefcase in the car, it could be a nuisance. Re-designing the paper-exit slot on top of the printer so that the paper feeds forward would solve the problem.

There is a choice of four 'print modes' on the front panel – draft, NLQ, quality and condensed – which should suit just about any application. These are all variations on the same font: draft uses bi-directional printing with a single pass per line; in NLQ and quality modes, the head makes two passes on the line but only prints from left to right – in quality mode the head slows down and drops more ink per character; and the condensed printing will fit a good-sized spreadsheet across an A4 page –

ABCDEFGHIJKLMN OPQRSTU VWXYZ  
 ABCDEFGHIJKLMN OPQRSTU VWXYZ  
 ABCDEFGHIJKLMN OPQRSTU VWXYZ  
 ABCDEFGHIJKLMN OPQRSTU VWXYZ

In draft, the Diconix gives a fast 120cps (characters per second) at a rated 45dBa.

This is the smallest of the three, but there is a penalty to be paid for that. Maximum print width is only 180mm, while an A4 sheet is 211mm wide and most printers can use over 200mm of that. In practice, I didn't find this a problem but it means that you will use up to 10 per cent more paper when printing long files.

Kodak's Diconix is priced at \$930 plus about \$30 for a parallel printer cable and \$19.80 per pair of batteries, but it's necessary to buy three pair for \$59.40 since the printer takes five of them – ready to go, then, it's \$1020. A replacement Kodak ink cartridge is \$26.40 and it is rated to last for around 500 pages.

### ExpressWriter 301

TOSHIBA'S EXPRESSWRITER 301 has a 24-element head which thermally transfers the ink from a ribbon cartridge to the paper. There's no mistaking that the ExpressWriter has been turned on – the print head does a rattle-y little jig before positioning itself ready for printing. In fact, printing with the ExpressWriter generally tends to be noisy – while the head is printing it gives a mechanical hum – this is probably what the 47dBa rating is based on – but the real noise comes when the head has finished a line, stops with a rattle, waits for a line feed and then does a noisy carriage return to print the next line.

While the printer is rated at 60cps in high speed and 42 in low (at 12cpi), this is something of an overstatement since, as the previous paragraph notes, the line feed/carriage return is a slow process. In practice, I found no difference in quality between the two speeds and left it on high. The only other hardware adjustment (aside from the DIP switches, of course) is a density setting, which varies the darkness of the print from quite readable to faint.

The standard emulations are Toshiba/Qume (P321SL/Sprint 5 and 11) and Epson LQ850. There are three fonts built in – draft, Courier and Prestige – but changing them requires using Escape codes. While the manual covers these codes in detail, it never tells how to send them to the printer.

This is done by opening a file, then typing in the Escape character – Ctrl-P. Esc works in most word processors – and then the appropriate 'codes' ([\*0 makes the change to draft mode, for example); save the file as ASCII and then print it from the command line. Pitch is changed the same way. It's not as easy to master as pushing buttons, but once you've created several utility files – one to change to condensed draft, another to change to 10cpi Courier, for example – it's straightforward. The same thing can be accomplished from the command line with: COPY CON: LPT1, hit enter, Alt-255 (ASCII Escape), the code and Ctrl-Z to finish.

While printing in draft is somewhat faster than either of the higher quality fonts, as you can see from this example (Courier, Prestige, draft from top to bottom) there is a real loss in quality –

abcdefghijklmnopqrstu  
 abcdefghijklmnopqrstu  
 abcdefghijklmnopqrstu

The ExpressWriter is designed for single, cut sheets, but I found it worked quite happily on continuous paper with the tractor feed strips removed – this certainly improves the quality of the user's print life. The buffer is satisfactory for a single-sheet printer – 4K. I found that with a full charge in the battery, it was possible to print about 35 pages of 55-line text.

The ExpressWriter measures 75 x 310 x 140mm and weighs 1.9kg. It's priced at \$739 including the re-chargeable battery plus a printer cable, \$30, and a box of five Mylar ribbons, \$39 – that's \$818 ready to print. One box of ribbons should be good for about 110 pages of printing.

### Canon BJ-10e

CANON'S LATEST BUBBLE jet offering has a 64-nozzle head – as you might expect from that, it gave by far the highest quality of the three printers. Its HQ (high quality) mode was laser-like in appearance; the Economy mode was quite acceptable and the economy condensed was just as good –

ABCDEFGHIJKLMN OPQRSTU  
 ABCDEFGHIJKLMN OPQRSTU  
 ABCDEFGHIJKLMN OPQRSTU VWXYZ

It is also quite fast, moving along at upwards of 80cps in both HQ and economy modes at 10cpi and almost 100cps at 12cpi – the only difference between those

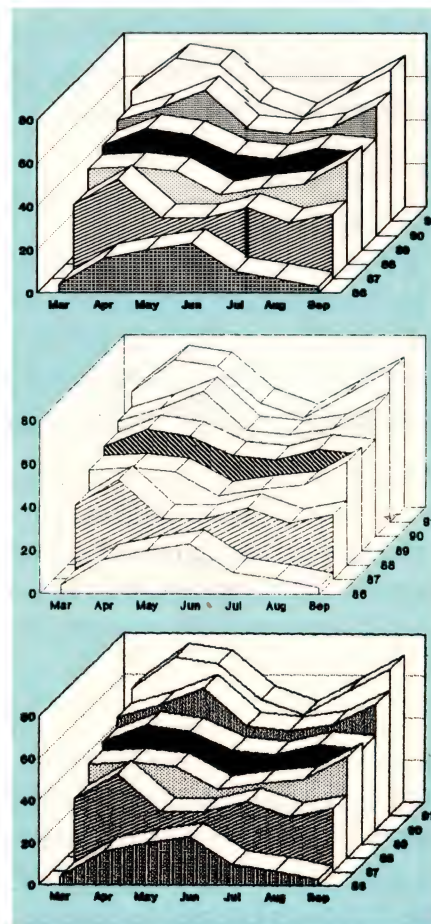
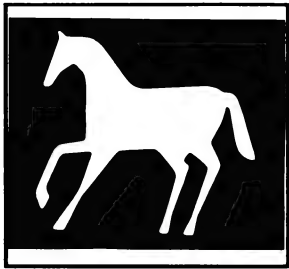


Figure 2. It's apparent from this simple chart from Harvard Graphics that none of these were meant to be graphics printers. The modes are the same as those used in Figure 1 (BJ-10e, top; ExpressWriter, middle; Diconix, bottom).





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two modes is that HQ forms the characters with a 36 by 48 dot matrix and economy, an 18 by 48 matrix, thus 'economising' on ink.

Weight with the battery pack is 2.1kg and the printer measures 48 x 310 x 216mm. It takes about 8hr to re-charge – but, the Canon can charge while being used, while the other two can't – and a full charge was good for almost 40 pages of 55-lines. Standard emulations are IBM ProPrinter and the BJ-10e's big bubble jet brother, the 130e. For a single sheet printer, the buffer is a more than adequate 37K.

Using the front panel, the BJ-10e also offers the largest selection of faces: elite (10cpi) and pica (12cpi) in HQ, HQ emphasised, and economy; HQ proportional, double-high and double-wide; and economy condensed (17cpi) and subscript – that's 11 in all. The panel also has forward and reverse adjustment buttons – since there is no platen knob and the platen resists manual turning, this could be handy if you are trying to align forms or letter-heads (with the other two, manual adjustment was possible by pulling the paper back and forth).

The panel buttons can also be used to clean the head. I didn't have any problems with the jets clogging (they are wiped across a pad on power up and capped when not in use) but discovered from the manual that the cleaning is to remove paper debris and dust if the quality is dropping off; it's recommended that cleaning should only be done then, otherwise ink will be wasted.

When printing, the Canon gives a quiet hum – it's rated at 'less than 45dBa' and is noticeably quieter than the Diconix. However, there is a bit of a rattle as the head returns to start a new line – the head is controlled by a metal, spiralled bar and it is the loose 'fit' between this and the head assembly that causes the noise.

Paper handling on the BJ-10e is its weakest feature. For example, on power up, it's necessary to punch the Line Feed button, wait for the paper to feed and then punch On-line before it's ready to go. I thought I might cheat and use the paper release (for jams) to let me push the sheet through, but the printer wasn't about to be fooled and still gave an error. Also, when a page is finished, it's necessary to wait until the first page is fully ejected and then repeat the exercise – that certainly detracts from the high-speed printing.

I tried it with continuous stationery, but the printer errored-out every time; oddly enough, this didn't happen after 66-lines (the set page length), but about half-way

	Q1	Q2	Q3	Q4	YTD
Net Sales	\$30,000.00	\$38,000.00	\$32,000.00	\$51,000.00	\$151,000.00
Operating Expenses:					
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Utilities	\$4,500.00	\$5,700.00	\$4,800.00	\$7,650.00	\$22,650.00
Rent	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$8,000.00
Ads	\$2,400.00	\$3,040.00	\$2,560.00	\$4,080.00	\$12,080.00
COG Sold	\$10,500.00	\$13,300.00	\$11,200.00	\$17,850.00	\$52,850.00
Tot Op Exp	\$25,400.00	\$31,640.00	\$26,960.00	\$41,780.00	\$125,780.00
Op Income	\$4,600.00	\$6,360.00	\$5,040.00	\$9,220.00	\$25,220.00

	Q1	Q2	Q3	Q4	YTD
Net Sales	\$30,000.00	\$38,000.00	\$32,000.00	\$51,000.00	\$151,000.00
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Payroll	\$6,000.00	\$7,600.00	\$6,400.00	\$10,200.00	\$30,200.00
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COG Sold	\$10,500.00	\$13,300.00	\$11,200.00	\$17,850.00	\$52,850.00
Tot Op Exp	\$25,400.00	\$31,640.00	\$26,960.00	\$41,780.00	\$125,780.00
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	Q1	Q2	Q3	Q4	YTD
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Tot Op Exp	\$25,400.00	\$31,640.00	\$26,960.00	\$41,780.00	\$125,780.00
Op Income	\$4,600.00	\$6,360.00	\$5,040.00	\$9,220.00	\$25,220.00

**Figure 1.** Output from the BJ-10e in economy mode (top), the ExpressWriter in high-speed (middle) and the Diconix in quality mode.

through the second page. Because there is nothing to align the paper with, it takes some care to make sure it goes in straight. The ExpressWriter has a guide of sorts on the paper rest/lid; while crooked paper is also a problem with the Diconix when using single sheets, the tractor keeps it straight with continuous paper. There is an optional 30-sheet feeder for the Canon, however, although it doubles the weight.

The Canon BJ-10e is priced at \$795 plus \$95 for the NICad battery pack and about \$30 for the printer cable – that's \$920 ready to print. The cartridges should last for about 450 pages of text and replacements are \$50. The optional sheet feeder is \$95. There is also a choice of case colours: white or dark grey.

One failing all three printers had in common was that there is no cut-out

switch under the lift-up panel over the print head. Normally you would only open it to replenish the ink or ribbon cartridge, but I can picture inquisitive little fingers poking around in there and getting burnt, pinched or mangled.

Which is the best of the three? That depends on the specific use. If size is significant, the Diconix, at 0.023 cubic meters is the smallest, while the other two are both about 0.33 cubic meters; there is less than 10 per cent difference in weight between the lot. If quality is the over-riding criterium, then the BJ-10e is the choice. If the printer is to be used in the office as well as from a briefcase, the Diconix has the flexibility. For occasional print jobs, the ExpressWriter is the best value, particularly considering it can be used with continuous stationery. □



# IBM'S UNIX STRATEGY

**C**HRIS FARROW OF IBM'S AIX Centre addressed a seminar on Solutions in Canberra recently and outlined IBM's strategy for Unix. He began by asking his audience how long they thought it took Intel to develop the i486 chip and reminded everyone that it took five years to create the 8806 and about three years to evolve the '286; the company then worked on the '286 for 18 months to come up with the '386. So how long did it take to develop the i486? only three weeks! Developing computer hardware is now taking less time Farrow went on to say, while software development is taking longer. Because hardware is getting better there is also a corresponding demand for more and better software.

The problem for developers and manufacturers is that no one can come up with a computer software system that makes best use of hardware technology in that short a space of time [three weeks], let alone come up with an operating system to use and exploit that new technology. So

**'Whither Unix?' that is the question many companies are asking as their computing needs increase and they seek more powerful solutions. Bill Olson reports on IBM's strategy . . .**

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just as hardware is becoming easier to manufacture, software is becoming harder and harder.

## **Increasing demand**

INTERNATIONAL DATA Corp has figures showing strong growth since the early eighties of open systems that will run on

most hardware, and a corresponding decline in proprietary systems which require dedicated hardware. The predicted trend between 1988 and 1992 from IDC shows Unix system growth moving from 9 per cent of the world market in 1988 to more than 20 per cent in 1992. Unix represents the single biggest change. Users are demanding systems that will outlive a single investment from a single manufacturer.

'Against that backdrop we have an operating system like Unix that is not linked to any particular architecture,' Farrow said. 'The idea of open operating systems is becoming increasingly important to both IBM as a hardware developer trying to cope with the ever increasing pace of change, and to our customers as users in this sort of environment.'

Farrow said some proprietary systems had already collapsed into Unix use. For example Data General have abandoned their AOS proprietary system in favour of Unix and many other companies are now moving in that direction.

The increasing demand for Unix prod-



*'The predicted trend between 1988 and 1992 . . . shows Unix system growth moving . . . to more than 20 per cent in 1992' - Chris Farrow, IBM's AIX Centre.*



*Unix International is a users group [while] OSF is a group of manufacturers and universities . . . who are all developing software.*



ucts has arisen simply because manufacturers are unable to sustain research and development in their own proprietary systems to keep pace with faster and faster hardware changes. 'Because of this trend, software companies are now saying: if I produce a Unix version of my software then I have a ready made marketplace,' Farrow commented.

### Setting standards

WHILE BOTH THE US government and European governments are keen to have Unix as a standard, Farrow said that the Holy Grail of Unix systems was not just some degree of commonality but a high degree of commonality with perfect portability from one environment to another. Unfortunately in 1989 there were more than 200 different Unix variants on the US market. Farrow said much has been done to set standards and mentioned in particular the Posix work aimed at drawing together Unix system V, Berkley Software Distribution and Xenix in a cohesive way.

As well as that standards environment, we have two organisations – Unix International, the Unix software operation sponsored by AT&T, Sun and Fujitsu; and the Open Software Foundation – as two organisations looking at developing versions of Unix that comply with those standards (Posix and X Open). IBM is a member of OSF, but there has been lots of press comment about Unix International versus OSF and whether or not they are going to amalgamate.

Farrow said that he saw the difference between Unix International and the Open Software Foundation as how they approached development. 'Unix International is a users group of the Unix software arm of AT&T who actually produce Unix version 5.4 and have feedback from the users.

'However OSF is a group of manufacturers and universities numbering around 180 who are developing software through open processes, rather than being a small group of software developers with a large membership in a users group.'

With OSF, the large membership is developing the software. Giving OSF Motif development as an example, Farrow said there were more than 40 respondents to the OSF request for tenders. He said this is a different approach to development when compared with Unix International because OSF is looking at developing software products not just limiting research to open operating systems. Farrow said that IBM's AIX Version III now runs across the range of hardware and is particularly

suited to the IBM Reduced Instruction Set Chip (RISC) 6000 machine.

### AIX III

AIX COMPLIES with the merged environment of System V and Berkley Software Distribution's 4.3. While it is not 5.4, it contains features and functions of 5.4. 'Interfaces on AIX are Unix, the commands are Unix and the kernel has been restructured to what is now called a 'nugget'. All the functions are pageable as against standard Unix where you get everything when you load up – it's like a sponge on memory. We tried to do things that allowed us to scale the environment to users during run time.

---

*Just as hardware is becoming easier to manufacture, software is becoming harder and harder.*

---

'The journal file system in AIX III is based on the Berkley Fastfile system but with journal extensions – it operates on database semantics – as a change is written into the file system, that change is journalled,' Farrow noted. 'If the system crashes, instead of a full file system check when you restart the system, as you normally do in a Unix system, we simply look at the journal and roll back one. The boot time of an AIX system is very quick: normally Unix can take half an hour or more to boot the system because the disk volume can be several gigabytes, but with AIX you simply look at the journal and apply the changes. It is very quick, more robust in operation and faster because there are less writes to the disk for each change.'

Farrow said that AIX uses the file storage on disk as a paging area which means that less resources are taken up for paging functions. AIX III has a logical volume manager to handle files bigger than a single disk. In a normal Unix environment a file system cannot be bigger than a single disk drive. If you have a file that needs to grow bigger than a physical disk then you have no choice except to buy a bigger disk.

'With the AIX system,' Farrow said, 'instead of the Unix operating system looking at the physical disk drive, it looks at logical disk drives so that a logical volume

can be composed of many disk drives. This means you can have a single file spanning and flowing across several disks in different drives. There is also part of the system that mirrors any changes made automatically. If, for example, a bad block goes to the mirror, it is written back to the drive on a good block.'

Managing the user interface is a lot easier with AIX, particularly because with normal Unix systems a lot of time can be spent editing text files. Farrow said that AIX holds all configurations within an object oriented data base which is managed through the interface. This allows a user not familiar with Unix to manage the system. The AIX system is also self-tuning – if it needs more space, then it grabs that space from normal memory.

AIX III also allows for different languages such as German and Japanese. 'The security on AIX is ratified as C2 secure in accordance with the US Department of Defence computing standards,' Farrow said. 'There are many features in AIX that approach the B1 security level.' Among the interface options for AIX version III is one for the Steve Jobs NeXT machine. Future developments for AIX include PostScript display for screens as well as 2D and 3D graphics support within X Windows. □



*The security on AIX is ratified as C2 secure in accordance with the US Department of Defence computing standards. There are many features in AIX that approach the B1 security level.*



# LANTASTIC NET

'Fantastic LANtastic' we headed our story three years ago on the most straightforward network-er we'd seen. We asked Dan Churchman, national sales manager for LANtastic Australia, to describe how it's since developed and to cover some of the finer points of networking for potential users.

**W**HEN LANTASTIC WAS created, it was targeted at small business – up to perhaps 10 or 15 users. It was a compact, simple LAN that was cheap; just what small businesses needed as a simple alternative to full-blown LANs (local area networks) costing thousands of dollars even at entry level. Since that time, LANtastic has been continually developed and enhanced and all the while improving its performance without using much RAM. With the release of version 3.0, LANtastic is winning a place among the multitasking, proprietary operating system networks like Novell, 3COM and Banyan Vines.

Through all this, LANtastic is still one of the cheapest LANs available, still has the smallest RAM requirement, and has maintained a reputation for reliability and simplicity of installation and use. LANtastic is certainly no longer the small LAN of its beginnings, and is gaining ground as a serious alternative for most networking requirements.

The 2Mbps (megabits per second) system uses 13K for a work station and 39K (default) for a server. For LANtastic Z and the Ethernet version, add 14K. These figures indicate the true RAM usage, unlike some networks claiming 2K or 3K for workstations, when in actual fact the software is being loaded into high memory, requiring a '286 or '386 system. LANtastic has no such hidden memory usage, so these figures are valid even for XT's.

The 2Mbps system has an option called the Daughter RAM Board, allowing the REDIR and, say, SHARE to be loaded high. This saves the 14K for the REDIR and about 5K-plus buffer space (commonly 2K to 6K) for SHARE.

Finally, ArtiSoft have the Adapter Inde-

pendent Network Operating System. The memory requirements for the LANtastic Redirector and Server programs are the same as for the Standard Versions, but the RAM usage of the NetBIOS for the third party adapters is another matter. Typical RAM usage starts around 30K to 50K, with some using well in excess of 100K. For an example, if one were to use the Western Digital WD8003/E adapter (a typical alternative) and used the supplied NetBIOS driver (WPLUSNBE – Super Disk version 1.6), they would find that driver takes over 84K of RAM.

## Topology

BOTH OF THE LANtastic hardware bases are Linear Bus. Since the AE2 10Mbps Ethernet Adapters comply with the Ethernet IEEE 802.3 standard (10Base2 and 10Base5), they can be used with the usual array of repeaters, bridges, fibre optic transceivers, multiplexers and so on. For the 2Mbps system, ArtiSoft have a Hub Unit, which is, basically, an intelligent Bridge and Repeater. The Hub may be cascaded with other Hubs, and so allows the building of Star Topology (cables fanning out from a central point) or Tree Topology (a combination of Star and Linear Bus).

Since LANtastic may be run on other platforms, it is limited only by topologies supported by cards with NetBIOS drivers. Because Token Ring adapters run IBM's NetBIOS, they too will support LANtastic which adds Ring Topology to the list.

## Installation

SOFTWARE INSTALLATION is a breeze – the LANtastic Install program will create all the necessary directories, copy the files, check the contents of your config.sys file and recommend changes, write a

batch file for you to start up the network and log you into your server. If you are a server, it will also optionally create a default user account, set up standard resources for your hard drive(s), install a printer and an e-mail area. The whole process takes less than two minutes per computer, and for simple installations using only one server, it is all that is required.

A list of known-to-be-compatible software is available, and is growing all the time. Contact Digital Solutions, (07) 883-1851, to have a copy faxed, or for access to our BBS where this file can be downloaded. For general purposes, there are three Rules of Thumb for determining, without actually testing, if a program will function correctly with LANtastic –

□ Compatibility with IBM's PC LAN. Since LANtastic's NetBIOS is fully compatible with IBM's, any software that is known to be compatible with PC LAN can be considered compatible with LANtastic. It is conceivable of course that a program may be designed specifically for IBM PC LAN, which would suggest the exclusion of any other network.

□ Any NetBIOS product that correctly implements NetBIOS calls as per the IBM PC LAN NetBIOS standard (refer to the *IBM PC Local Area Network Program – Application Programmer's Guide*, IBM Part Number SC19-5136-0) will function properly on LANtastic.

□ Any networking/multi-user product that correctly implements Dos 3.1 (and higher) file and record locking and *implements shared file access* will function properly on LANtastic.

These guidelines are all that are needed to determine the likely-hood of compatibility. Of course, seeing is believing, and Digital Solutions is always ready to assist in the testing of programs for compatibility.

## Caching

THE LANTASTIC cache, LANcache, has the usual read-ahead ability, also uses write delay, is multi-tasking, and is of course optimised for use with LANtastic. While the write delay is fairly common these days, the method used for writing can make a very big difference.

LANcache uses a sophisticated algorithm to achieve what is called elevator seeking. Consider the distance the disk



# WORKING

drive's head must cover in the following example: A program writes clusters to tracks in the following order, track numbers 10, 1000, 100, 1000, 500, 10, 90, 10, 1000, 10, 999 (this could easily represent a single data file that has been fragmented). Then calculate the distance in tracks the heads must move – 10 to 1000 to 100 to 500 ... to 999 = 7826 tracks travelled with 11 revolutions of the disk during writing. What LANtastic will do is sort all of these writes, and perform them in sequence, one track at a time so that it would write track in the order of # 10, 90, 100, 500, 999 and 1000 = 990 tracks travelled with only 6 revolutions for writes, which translates to about 13 per cent the time used in seeking tracks to write the data without LANtastic.

There is a growing availability of network/NetBIOS products for improving productivity, making better use of resources – doing all those things a network makes possible. For example, there are scheduling programs that use the NetBIOS to communicate with each other, checking your appointment schedule with one or more other staff members for a time slot available to all of you; programs like LAN+MODEM for sharing up to 20 modems across the network; utilities like AGANET for boosting CD-ROM performance across the network; and fault Tolerance software.

## Connectivity

SINCE LANTASTIC is fully compatible with IBM's PC LAN NetBIOS, it is also compatible with many products intended for use with PC LAN and related NetBIOS-based programs. Bridges, Gateways, Serial Links, TCP/IP, and so on. Products like ICC LAN, IRMALAN, LAN Micronode and Mainlink are compatible with LANtastic, enabling connection to many other platforms including Unix, Novell, VAX, IBM Mainframes and Macintosh systems.

LANtastic sports a complete suit of e-mail options –

**Datagram.** This 'catch me if you can' option is perfect for sending a quick message to a person or persons on the network. A small window will pop up on their screen with the message displayed.

**Chat.** Another way to achieve quick, interactive communication is to select the Net Chat. This feature allows two-way communication between users. If you both have the optional Voice Cards, you can talk to each other in real-time. There is a small delay between transmission and reception, just like talking overseas, only a little quicker.

**Mail.** For longer than one-liners, or when it is important that the message be received and the recipient is not available, a stored message is the way to go. This message will be received and held on a nomi-

nated server for later perusal by the addressee. The command 'Net Postbox' will scan all the servers you are logged on to for mail addressed to you. Since wild cards can be used in the target's name, you might use a name that qualifies several people, like ADMIN-\* when you have user accounts like ADMIN-SUE, ADMIN-BOB and so on. The message is read or played back at the convenience of the recipient and the voice message can be rewound/replayed as required.

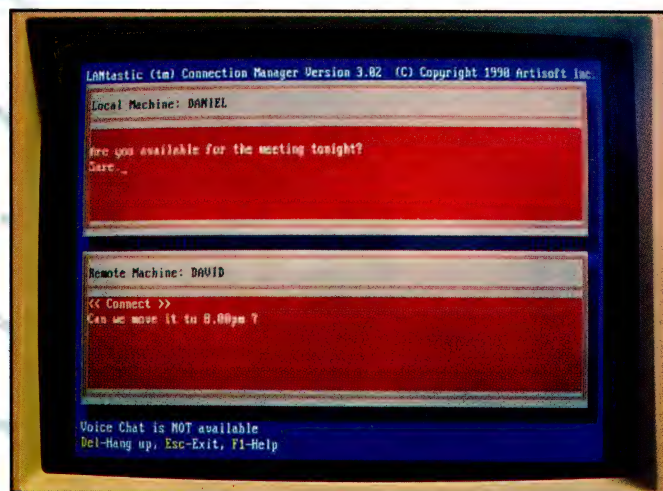
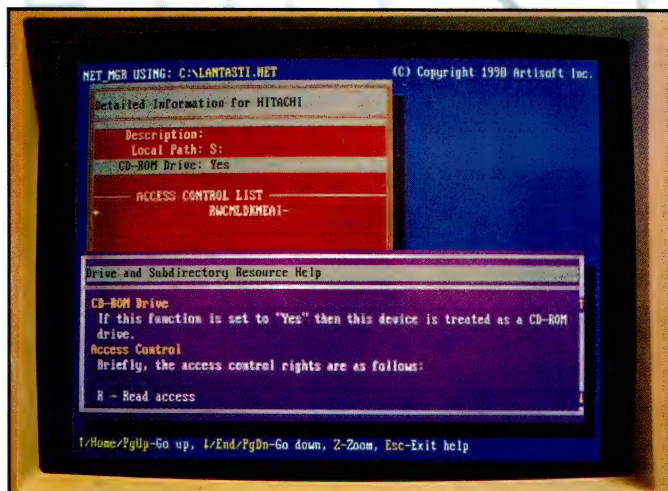
## Security

LANTASTIC HAS several layers and methods of security, all of which are optional. Although, it could be argued that the need for a User Account constitutes security, and certainly this is the minimum requirement for accessing a Server.

The first and most obvious Line of Defence is a password to access a Server. Each user can be assigned a password, and the Server will insist on receiving that password before allowing a connection to be made in that user's name.

LANtastic implements ACLs, Access Control Lists. These are –

- R** – Read Access
- W** – Write Access
- C** – Create File
- M** – Create Directories
- L** – Allow File Lookups (DIRs)
- D** – Delete File
- K** – Delete Directory
- N** – Rename File
- E** – Allow Program Execution



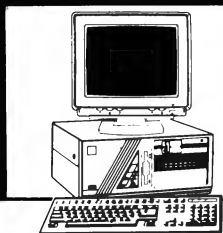
CD-ROM support is the easiest and most flexible with LANtastic. Just say 'yes' in the CD-ROM field, and that's all there is to it; your CD-ROM is now a sharable device.

Net Chat allows full, two-way real-time communication between users. If both users have the optional voice cards, they can conduct a telephone-like conversation.



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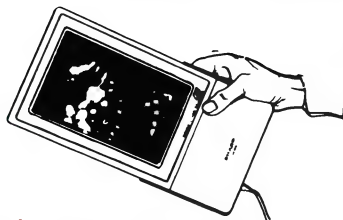
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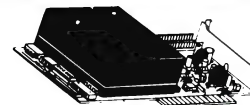
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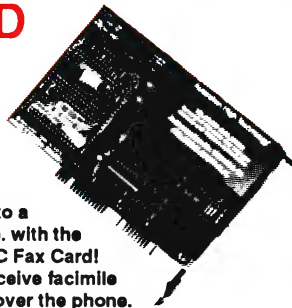
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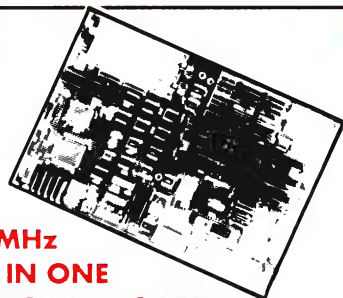
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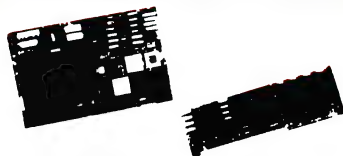
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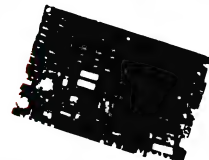
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```
ADMIN* -----L-----E-----
MANAGER RWCMLDKNEA--
*
```

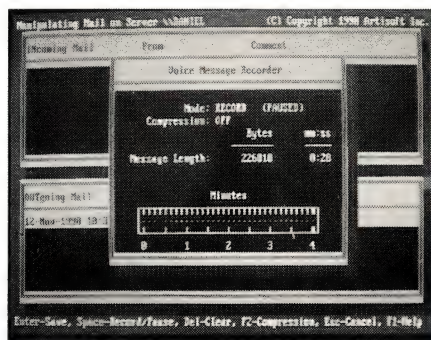
What this means is that '\*' (all) have no access, though users whose accounts start with ADMIN- can do directory listings and run programs from there, and the user called MANAGER (probably the network Manager) has full access rights. He hasn't been assigned 'I' or 'P', but for most resources these won't be used.

Each user's account may have an expiry date set for their account. On that day, the account is invalidated, thus removing the user from the active list. Password Expiry is similar to Account Expiry, except that this invalidates the password. A number of days can be specified as the 'life-cycle' of a user's password. If this was set to 7, say, then a user must change the password at least once a week.

Each user, for each server, may be restricted in half-hour increments to accessing the Server only during certain times of the day. Each day of the week can be separately programmed, for example, 8:30am to 5:00pm Monday to Friday, 8:30am to 12:30pm Saturday and no access on Sunday.

Privileges allow a user to be granted over-rides on certain areas. 'A' is the ACL over-ride. If a user is granted this privilege, the ACL list(s) for resources on this server will not be checked. 'Q' allows this user to access *all* printer queue jobs on this server – normally, users can only access their own jobs. 'M' allows this user to access *all* mail entries on this server. Normally, a user can access only mail addressed to or from themselves.

'U' allows this user to make manual entries into the Audit Trail on this server; this Audit Trail is a feature whereby a Server can be set to record one or more types of activity, like logins, logouts, print jobs, illegal entry attempts and the like; it does not allow this user to read or modify this file, rather only make an additional, manual entry. 'S' is the System Manager option; this privilege bestows special access rights to this user. Details will be available when this option becomes active.



*LANTastic is the first peer-to-peer LAN to offer voice mail.*

## CD-ROM support

LANTASTIC WON THE US *PC Magazine's* Editor's Choice for Network CD-ROM support in February, 1990, in competition with some 'big' systems like Novell. LANTastic proved faster than Novell, and was far and away easier to implement. Because of the behaviour of some CD-ROM software packages, there can be problems with actual operation of the CD from workstations. To outline three basic categories of CD –

**1) Standard Dos calls.** These programs, like PC-SIG, attempt to do no fancy low level accessing, but make standard Dos calls *only* to read and search the CD.

**2) MSCDEX.** Some programs, like Info World by World Book, make a few initial calls to MSCDEX (Microsoft CD Extensions). These are usually simple calls, like how many CDs are available, and are easily dealt with by a program written by Digital Solutions and released to the Public Domain as MXSUB. It presents the appearance of MSCDEX for these sort of programs. These programs, once gaining the information they wanted for initialisation, proceed to run at this point by normal Dos calls.

**3) Device Driver (and extensive MSCDEX).** Some programs present a more difficult problem, since they either converse fully with MSCDEX (meaning MSCDEX might as well be installed, which requires the CD driver be installed) or communicate directly with the CD driver itself. Both of these problems could be resolved by using a pseudo-CD-driver on the workstation. Digital Solutions has begun development of this driver at the time of this writing, and expects it to be released by the time you read this.

A question I'm repeatedly asked is, 'How does LANTastic compare to Novell

in performance?' In May 29, 1990, *PC Magazine* came to the rescue with two articles, one on multitasking LANs like Novell, 3COM, and Banyan Vines and one on Dos-based LANS such as LANTastic, Lan-smart, IONet and the like (in which LANTastic won Editor's Choice, again). In the Dos-based section, there was no real competition for LANTastic – in all categories, for all conditions, LANTastic was more than twice as fast as its closest competitor.

So what of the multitasking LANs? The first thing I noticed was that Novell's elite product Netware 386 was at the top of the pile – no surprises there. Interestingly, LANTastic actually out-performed VMS Services for PCs and AT&T StarGROUP (Unix). There were only two Novell times directly comparable, one Netware 386 and the other Advanced Netware 286. All other samples were on MCA or EISA busses, or on special Network Servers. Calculating LANTastic as a percentile of the performance of the two Novell systems was very educational; it gave 56 per cent of Netware 386 and 75 per cent of Advanced Netware 286... and this from a product where the software is included with the network adapters. It should be noted that LANTastic is a peer-to-peer system, and so obtains even better performance from a distributed-server arrangement.

LANTastic is currently functioning in many sites of over 30 nodes; one government site in particular has grown to nearly 70 nodes in a Wide Area Network – yes, that's right, LANTastic can be WANed!

Table 1 is part of the Summary of Features that appeared with that article and I have added the answers for LANTastic, but a simple analogy illustrates the points I think it makes: If you have need of moving 10 or 20 tonnes of material long distances, you buy a semi-trailer of appropriate configuration. If you need to move a variety of smaller loads of say a tonne or so, you buy a flexible, all-purpose vehicle capable of carrying one or two tonnes.

In other words, if you are *really* going to need and use a high percentage of the 'load-carrying capacity' of Novell, then buy it and know you did the right thing. If however you are going to use a small percentage of its capacity case, that solution becomes uneconomical.

If you have work for a utility but get a semi to do the job, the initial purchase and ongoing maintenance and running costs are just not justified. Perhaps 80 per cent of networking sites need a light but powerful, versatile yet simple workhorse; more is overkill.



Feature	Netware 286	386	LANTastic	Encrypted passwords can be sent over network	Yes	Yes	No
List price (approx.)	6000	12,500	300 <sup>1</sup>				
Max. users for price	100	Unlimited	120				
Hard disk format	Proprietary	Proprietary	DOS				
Fault tolerance through disk mirroring	Yes	Yes	3rd Party	<b>E-Mail Service</b>			
Max. cards bridged in server	4	4	1 <sup>2</sup>	Can store and forward messages	No	No	Yes
Max. number of simultaneous logins	100	250	64 per server <sup>3</sup>	User can attach binary files to messages	No	No	Yes
Recommended min. server RAM	2Mb	4Mb	1Mb	<b>Printing</b>			
<b>Workstations</b>				Print spooling is available	Yes	Yes	Yes
Max. RAM left with network and DOS loaded	540K	556K	567K	User can modify print queue	Yes	Yes	Yes
With NetBIOS added	516K	516K	567K	Number of printers supported	5	16	5 per server
OS/2 Compatible	Yes	Yes	No	Workstation printers supported	No	Yes	Yes
<b>File System</b>				Fonts can be downloaded	Yes	Yes	Yes
Max. concurrent open files per server	1,000	100,000	5,100				
Max. volumes per server	32	32	26				
Max. physical drives per volume	1	32	See note 4				
Max. physical drives per server	32	1,024	See note 4				
File can span multiple drives	No	Yes	See note 4				
Max. file size	255Mb	4Gb	See note 4				
Max. volume size	255Mb	32Tb	See note 4				
Max. physical RAM addressed	12Mb	4Gb	12Mb				
Max. total disk storage	32Gb	32Tb	See note 4				
<b>Administration</b>							
Keeps historical status/error log	Yes	Yes	Yes				
Reports number of bad packets	Yes	Yes	Yes				
Reports network errors	Yes	Yes	Yes				
Monitors open files	Yes	Yes	Yes				
Displays names of users logged on	Yes	Yes	Yes				
Displays current server load as % of total load	Yes	Yes	3rd party				
<b>Security</b>							
Access to resources can be by groups	Yes	Yes	Yes				
Access can be controlled by time/date	Yes	Yes	Yes				
Passwords can be associated with resources	Yes	Yes	Yes <sup>5</sup>				

## Notes

1. The standard LANTastic Network Operating System is included in the cost of the LANTastic adapters. If alternative adapters are used, however, users will need to buy the Adapter Independant Network Operating System at a cost of \$662.
2. LANTastic does not bridge between cards in a server however it can support up to 6 network adapters in one server running separate network branches.
3. Whilst a theoretical maximum of 19,200 logins could be active throughout the entire network (by virtue of 300 servers each supporting their maximum 64 users) it must be remembered that this still only comprises 300 users. I suspect that such a situation would be horrendously complicated in any case, and doubt that anyone would get even a fraction of the way there in any serious installation of LANTastic.
4. Disk drive figures depend on the drives used, and not LANTastic. For example, a SCSI drive may allow up to 16 units on one daisy chain, and disk volumes and files to span physical drives. This is independent of LANTastic since it does not handle the drives like Novell does. If it can be done under DOS, it can be done with LANTastic.
5. Though this cannot be done directly, such an arrangement can be achieved using a user's password and ACL controls in conjunction with Indirect Files.
6. In the strictest sense, a workstation cannot support a printer, but since any machine on a LANTastic network may be a server, it is fair to say all of them can support printers, (yes, up to 300 machines x 5 printers = 1500 networked printers). A floppy-only machine previously could select a server with a hard disk on the network as it's spooling location. This has been disallowed under version 3 - we are waiting to see if it can be re-implemented.

**Table 1.** This is a summary of network features that appeared last year in an American magazine - I've filled it in for LANTastic. Also, LANTastic's performance was 56 per cent of Netware 386's and 75 per cent of Advanced Netware 286's.

Identifying your category can be misleading at times. As I mentioned, LANTastic is running happily on some very large sights. The key to judging the 'load' then is not simply a matter of the number of users. If 60 users are running various applications, then LANTastic can use its

peer-to-peer nature to distribute the serving to several machines. If on the other hand those 60 users must all work on the same database at the same time, hence the same server, then Novell would be better suited for its speed advantage on the server.

Finally, in every performance/price comparison, be it LAN, Mini or Unix based, LANTastic is always providing the most 'bang for the buck'. The simple fact then is, if LANTastic can do what you require with reasonable room to grow, you are wasting money to use another solution. □



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- All products are purchased from the official Australian distributors, so technical support and upgrades are available.
- FREE after sales technical support also available.

# PC-INSTRUCT

**P**C-INSTRUCT IS a 'shell program' to run on any IBM PC/compatible computer, which will enable you to quickly build instructional programs on any subject. Even in its Basic form as listed here it is fast enough to be genuinely useful for self-education, or within a school (and a version of the program compiled into machine code, complete with sample lessons of the 'teach yourself about computing' variety is available from the author for just \$2).

The program came about from work I did when writing the shareware program 'The Professional Astrologist', in which I wanted to be able to print out a lot of text related to a person's star sign, and did not want to store the text within the program itself. I tried that at first, but kept running out of memory. I then wrote the first simple routine to read in text from disk, and display it on the screen, and/or on the printer.

Once I'd finished the astrology program (which, by the way, includes a great deal more than just a text-reader, including an astrological calculator, and the ability to print out a day-by-day forecast for a year), I realised the ideas I had used for that program contained the seeds of a much more useful, general purpose program which I decided to call PC-Instruct. I first used it to create the 'teach yourself about computing' lesson material which comes with the disk version of this program, and am now writing a 'teach yourself statistics' course with PC-Instruct as its core.

PC-Instruct handles up to 21 lessons with any subject, and the lessons can combine textual information with questions which need to be answered before the lesson continues. The lesson titles and content are held in separate ASCII files on your disk, which you've created using a word processor. The program 'remembers' where the learner was up to when he or she quits from the program, and you can return to exactly the same spot next time you run it.

In addition, the program includes a window which appears over the lesson text when you evoke the 'Print lesson on the printer' option (and which, naturally enough, scrolls away after use revealing, intact, the lesson material which was previously hidden).

You may also be interested in 'extracting' the menu system used in the 'select a lesson' part of the program (lines 540 to 820), in which menu-items are selected by

Here's a shell from Tim Hartnell that can be used to develop 21-lesson courses.

It also provides a handy collection of routines that can be used in your own Basic programs on the PC.

use of the arrow keys, with the selected item appearing in reverse printing on the screen.

The program construction is straightforward, and divided into clearly labelled subroutines, so you can modify it fairly easily to fit into your educational needs.

It is extraordinarily easy to operate. When you run PC-Instruct, the Master Menu will appear offering a choice between running the program, returning to a lesson, changing the screen colours or quitting.

You'll see from the listing which prints up this menu (lines 1250 to 1450), that the lines are not printed out from the top of the screen down to the bottom. Instead of this, the Locate command is used to make the text seem to 'spring into being' on the screen. The effect is surprisingly effective.

To do it, write the program in the normal way, so the text goes down the screen from top to bottom, using a Locate statement before each Print command. Then, list the lines on the screen and renumber them by swapping line numbers on the screen. Swap the last Locate/Print line number for the first, the second last for the second one, and so on, until you 'meet in the middle'.

## Colour selection

IF YOU CHOOSE changing colours from the Master Menu, you will be given the choice of changing the first and second text colours or the border (see the routine from line 1470). After selecting one of these, a range of colours with numbers beside them will appear. Each of the choices is printed in the relevant colour. If you had, for example, indicated that you wished to change the first text colour, and you pressed the '7' above to tell the program you wanted it to be white, the line 'The first text colour is currently this' would now re-appear printed in white. You

can change the colours as many times as you like. Once you press the '4' key, to tell the program you wish to 'run the program with the above choices', the program will write the colour choices to the disk, so they can be used on the next run, before returning to the Master Menu.

Note that, *before* you run the program the first time, you need to type in GOTO 140 and then press the ENTER key, in order to create a file on disk called Restart which contains the basic information the program needs (including the initial colour choices) in order to run. You only need to type in the GOTO 140 once, and the file will then be available to be accessed every time you run the program from that disk.

## From the beginning

IF YOU SELECT the 'run the program from the beginning' option from the Master Menu, the titles of the available lessons will appear. Use the arrow keys to choose, Enter to run lesson, Esc to quit, M for Menu. When you first see this screen, the first lesson title will be reversed (the reversal colours have been chosen so they will show up even on monochrome screens, no matter which colour selection has been made by the user; see line 790), and the text file to which it refers appears in the bottom right hand corner. If you do not want the text file name to appear, delete line 810.

Reading the arrow keys is not totally straightforward, as they produce a two-character length code when pressed, in contrast to the single character code produced by nearly all the others. Line 610 reads the keyboard using INKEY\$, and line 630 checks to see if Enter (ASCII code 13) has been pressed. Next, the program checks, in line 640, to see if the 'M' key has been pressed to return to the Master Menu. Line 650 checks to see if the Escape key (ASCII code 27) has been pressed. The next line, 660, now checks to see if the key pressed has generated two characters, and if it has not, returns action to line 610 to wait for another key press.

The next routine, from lines 670 through to 780, first extracts the *second* character read by the INKEY\$ routine (see line 670, where the right-most character is set equal to X\$), and then uses this letter, and whether or not the reversed-out section is being printed from the second, or the 42nd, column across, to determine how to proceed.



```

10 REM PC-INSTRUCT
20 REM Tim Hartnell - Your Computer
30 DEFINT A-Z
40 DIM T$(21),R$(21):REM For titles
50 DIM D$(1000):REM For lesson text
60 KEY OFF:SCREEN 0,0,0:COLOR 14,0,0:WIDTH 80:CLS
70 J=0:A$="Menu":OPEN A$ FOR INPUT AS #1
80 LINE INPUT #1,Z$:IF Z$="" THEN 100
90 J=J+1:T$(J)=Z$:LINE INPUT #1,Z$:R$(J)=Z$:IF J<21 THEN 80
100 CLOSE #1
110 GOSUB 270:REM Info from last run
120 GOSUB 350:GOTO 120:REM Select file once run under way
130 REM *****
140 REM Next routine used to WRITE initial file and 'STATE OF
    PLAY' on disk
150 REM Before running program for the first time, enter a GOTO
    140 as a direct command to set up the initial file
160 Z=2:LN=1:YL=14:GN=10:RD=12
170 REM *****
180 A$="Restart":OPEN A$ FOR OUTPUT AS #1
190 PRINT #1,STR$(Z):REM Number of lesson
200 PRINT #1,STR$(LN):REM Line in lesson
210 PRINT #1,STR$(YL):REM Colour for YL
220 PRINT #1,STR$(RD):REM Colour for RD
230 PRINT #1,STR$(GN):REM Colour for GN
240 CLOSE #1:IF SFLAG=1 THEN RETURN
250 REFLAG=0:LOCATE 23,1:END
260 REM *****
270 REM Next routine used to READ 'STATE OF PLAY' from disk
280 A$="Restart":OPEN A$ FOR INPUT AS #1
290 LINE INPUT #1,NUM$:Z=VAL(NUM$):REM Number of lesson
300 LINE INPUT #1,LN$:LN=VAL(LN$):REM Line in lesson
310 LINE INPUT #1,YL$:YL=VAL(YL$):REM Colour for YL
320 LINE INPUT #1,RD$:RD=VAL(RD$):REM Colour for RD
330 LINE INPUT #1,GN$:GN=VAL(GN$):REM Colour for GN
340 CLOSE #1:REFLAG=1:RETURN
350 REM *****
360 GOSUB 1240:REM ASK WHERE TO BEGIN RUN/CHANGE
    COLOURS
370 REM Program proper begins here
380 GOSUB 1660:REM Print frame
390 REM Now put titles on screen
400 J=0:A$="Menu":OPEN A$ FOR INPUT AS #1
410 LINE INPUT #1,Z$:IF Z$="" THEN 450
420 J=J+1:T$(J)=Z$:LINE INPUT #1,Z$:R$(J)=Z$
430 IF LEN(T$(J))>38 THEN PRINT T$(J); " is too long by";
    38-LEN(T$(J));"characters":REM Alerts programmer to title
    which is too big for display
440 IF J<21 THEN 410
450 CLOSE #1:LOCATE 1,(38-LEN(T$(1))/2):COLOR YL:PRINT
    T$(1):COLOR GN
460 N=2:FOR Z=2 TO J
470 D=42+1*40*(2*INT(Z/2)-Z):REM This line determines whether
    title print begins at location 2 or location 42, based on
    TRUE=-1, FALSE=0
480 LOCATE (N*INT(Z/2)+1),D:PRINT T$(Z)
490 NEXT Z
500 IF AK=1 THEN RETURN
510 LOCATE 21,47:COLOR RD:PRINT "Text file: ";:COLOR
    YL:PRINT R$(2)
520 IF INKEY$<>"" THEN 520
530 REM *****
540 REM Now select file to be read using arrow keys
550 IF RERN=1 THEN A$=CHR$(13):GOSUB 270:GOTO 630
560 LOCATE 23,3:COLOR GN
570 PRINT "Use ";:COLOR YL:PRINT "ARROW KEYS";:COLOR
    GN:PRINT " to choose, ";:COLOR YL:PRINT "ENTER";
580 COLOR GN:PRINT " to run lesson, ";:COLOR YL:PRINT
    "ESC";:COLOR GN:PRINT " to quit, ";:COLOR YL:PRINT

```

```

    "M";:COLOR GN:PRINT " for Menu"
590 A=2:D=3:Z=2
600 LOCATE D,A:COLOR 0,7:PRINT T$(Z):COLOR GN,0:B$=R$(Z):
    REM B$ is name of file to run
610 A$=INKEY$:IF A$="" THEN 610
620 EA=A:ED=D:EZ=Z:REM variables to erase after use
630 IF A$=CHR$(13) THEN GOSUB 840:SFLAG=1:GOSUB 180:
    CLS:GOTO 380:REM 'ENTER', so execute
640 IF A$="m" OR A$="M" THEN SFLAG=1:GOSUB 180:RUN
650 IF A$=CHR$(27) THEN SFLAG=0:GOTO 180:REM 'ESCAPE', so end
660 IF LEN(A$)<2 THEN 610
670 X$=RIGHT$(A$,1)
680 IF X$="P" AND A=42 AND J<2*INT(J/2) AND D=J-2 AND Z=J
    THEN 770
690 IF X$="P" AND A=42 AND 2*INT(J/2)=J AND D=J-1 AND Z=J
    THEN 770
700 IF X$="P" AND Z+N>J THEN 770
710 IF X$="M" AND A=2 AND 2*INT(J/2)=J AND Z=J AND D=J+1
    THEN 770
720 IF X$="H" AND (A=2 OR A=42) AND D=3 THEN 770
730 IF X$="H" AND D>N THEN D=D-N:Z=Z-N:GOTO 770
740 IF X$="P" AND D<J THEN D=D+N:Z=Z+N:GOTO 770
750 IF X$="K" AND A=42 THEN A=2:Z=Z-1:GOTO 770
760 IF X$="M" AND A=2 THEN A=42:D=D-N:Z=Z-1
770 LOCATE ED,EA:COLOR GN,0:PRINT T$(EZ)
780 IF X$="M" AND A=42 THEN X$="P":GOTO 740
790 LOCATE D,A:COLOR 0,7:PRINT T$(Z):B$=R$(Z):COLOR GN,0
800 REM Delete next line if you don't want the name of the relevant
    text file to appear
810 LOCATE 21,47:COLOR RD:PRINT "Text file: ";:COLOR YL:
    PRINT B$; " "
820 COLOR GN:GOTO 610
830 REM *****
840 REM Run file
850 B$=R$(Z)
860 LOCATE 21,47:COLOR YL:PRINT " Loading : ";:COLOR
    (GN+16):PRINT B$; " "
870 OPEN B$ FOR INPUT AS #1
880 QL=0
890 LINE INPUT #1,C$:IF C$="" THEN 930
900 STLN=LEN(C$):IF STLN<47 THEN C$=C$+STRING$(31,32):
    GOTO 900
910 IF LEN(C$)>78 THEN C$=LEFT$(C$,78)
920 QL=QL+1:D$(QL)=C$:GOTO 890
930 CLOSE #1
940 LOCATE 23,1:COLOR GN
950 COLOR GN:PRINT "Use ";:COLOR YL:PRINT "ARROW
    KEYS";:COLOR GN:PRINT " plus ";:COLOR YL:PRINT
    "Home, PgUp, End, PgDn";
960 COLOR GN:PRINT " to move, ";:COLOR YL:PRINT "P";:COLOR
    GN:PRINT " for print out, ";:COLOR YL:PRINT "ESC";:COLOR
    GN:PRINT " to end"
970 COLOR RD,0:LOCATE 1,1,0:PRINT CHR$(213)+STRING$
    (78,205)+CHR$(184):COLOR YL
980 LOCATE 1,(38-INT(LEN(T$(Z))/2)):PRINT T$(Z):COLOR GN
990 FOR K=2 TO 21:LOCATE K,2:PRINT STRING$(77,32):NEXT K
1000 REM 'Current position', line at top of screen=LN
1010 M=2:FOR K=LN TO LN+18
1020 M=M+1:LOCATE M,2:PRINT STRING$(77,32)
1030 LOCATE M,3
1040 PRINT D$(K)
1050 REM ** Next lines are for question in text; line starts with >
1060 IF LEFT$(D$(K),1)<>">" THEN 1110
1070 FOR QP=M+1 TO 21:LOCATE QP,2:PRINT STRING$(77,32):
    NEXT QP
1080 LOCATE M+2,4:PRINT "> ";:INPUT ANSWER$
1090 FOR QP=M+1 TO 21:LOCATE QP,2:PRINT STRING$(77,32):
    NEXT QP
1100 REM ** End of question segment **

```

```

1110 NEXT K
1120 Y$=INKEY$
1130 IF Y$=CHR$(27) THEN SFLAG=1:GOSUB 180:RETURN
1140 IF Y$="P" OR Y$="p" THEN GOSUB 1790:REM Print out
1150 IF LEN(Y$)<2 THEN 1120
1160 Y$=MID$(Y$,2)
1170 IF Y$="H" AND LN>1 THEN LN=LN-1
1180 IF Y$="P" AND LN+18<QL THEN LN=LN+1
1190 IF Y$="G" THEN LN=1
1200 IF Y$="O" THEN LN=QL-18
1210 IF Y$="I" AND LN>18 THEN LN=LN-18
1220 IF Y$="Q" AND LN+18<QL THEN LN=LN+18
1230 GOTO 1010
1240 REM *****
1250 REM Start of run
1260 COLOR 31:LOCATE 3,33:PRINT "Master Menu"
1270 COLOR RD,0:LOCATE 5,5,0:PRINT CHR$(213)+STRING$(
    (68,205)+CHR$(184)
1280 FOR K=6 TO 16:LOCATE K,5:PRINT CHR$(179)+STRING$(
    (68,32)+CHR$(179):NEXT K
1290 LOCATE 17,5:PRINT CHR$(212)+STRING$(68,205)+CHR$(190)
1300 COLOR GN:LOCATE 16,17:PRINT "(4) quit from the program?"
1310 LOCATE 13,31:COLOR GN:PRINT "Text in ";:COLOR YL:
    PRINT "these colours"
1320 LOCATE 10,27:COLOR GN:PRINT "last time you ran the program:"
1330 LOCATE 7,17:PRINT "(1) run the program from the beginning:"
1340 LOCATE 9,17:PRINT "(2) return to the lesson you were reading"
1350 LOCATE 12,17:PRINT "(3) change the colours from these:"
1360 LOCATE 5,8:COLOR YL:PRINT "Do you want to:"
1370 LOCATE 14,31:COLOR RD:PRINT "Border in this colour"
1380 COLOR YL:LOCATE 3,33:PRINT "Master Menu"
1390 GOSUB 260:REM Get last parameters used
1400 A$=INKEY$:IF A$<"1" OR A$>"4" THEN 1400
1410 IF A$="1" THEN REFLAG=0:SFLAG=1:GOSUB 140:SFLAG=0:
    RETURN:REM Reset to initial defaults
1420 IF A$="2" THEN CLS:GOSUB 1660:GOSUB 840:RETURN:
    REM Run from where last left off
1430 IF A$="3" THEN GOSUB 1470:RETURN:REM Change colours
1440 IF A$="4" THEN SFLAG=0:GOTO 180:REM End of run
1450 GOTO 1400
1460 REM *****
1470 REM Change colours
1480 CLS
1490 LOCATE 15,19:COLOR GN:PRINT "(4) to RUN the program
    with the above choices"
1500 LOCATE 7,15:COLOR YL:PRINT "while the SECOND text
    colour is this."
1510 LOCATE 14,19:COLOR RD:PRINT "(3) to change the BORDER
    colour; or"
1520 LOCATE 13,19:COLOR YL:PRINT "(2) to change the SECOND
    text colour;"
1530 LOCATE 12,13:COLOR GN:PRINT "Enter (1) to change the
    FIRST text colour;"
1540 LOCATE 9,17:COLOR RD:PRINT "The BORDER is in this colour."
1550 LOCATE 5,13:COLOR GN:PRINT "The FIRST text colour is
    currently this."
1560 A$=INKEY$:IF A$<"1" OR A$>"4" THEN 1560
1570 IF A$="4" THEN SFLAG=1:GOSUB 180:RETURN
1580 LOCATE 16,1:PRINT"Choose from these colours:":COLOR 9:
    PRINT TAB(19);"1 - Blue":COLOR 10:PRINT TAB(19);"2 -
    Green":COLOR 11:PRINT TAB(19);"3 - Cyan":COLOR 12:
    PRINT TAB(19);"4 - Red"
1590 COLOR 13:PRINT TAB(19);"5 - Magenta":COLOR 14:PRINT
    TAB(19);"6 - Yellow":COLOR 15:PRINT TAB(19);"7 - White"

```

```

1600 B$=INKEY$:IF B$<"1" OR B$>"7" THEN 1600
1610 BCL=VAL(B$)+8:IF A$="1" THEN GN=BCL
1620 IF A$="2" THEN YL=BCL
1630 IF A$="3" THEN RD=BCL
1640 GOTO 1470
1650 REM *****
1660 REM Print frame
1670 CLS
1680 COLOR RD,0:LOCATE 1,1,0:PRINT CHR$(213)+STRING$(
    (78,205)+CHR$(184)
1690 RESTORE 1740:FOR K=1 TO 21:READ W:LOCATE W,1:
    PRINT CHR$(179)+STRING$(78,32)+CHR$(179):NEXT K
1700 LOCATE 22,1:PRINT CHR$(212)+STRING$(78,205)+CHR$(190)
1710 LOCATE 1,(38-LEN(T$(Z)))/2:COLOR YL:PRINT T$(Z)
1720 RETURN
1730 REM *****
1740 REM Data for Frame print
1750 DATA 2,22,3,21,9,20,8
1760 DATA 19,6,12,13,17,5
1770 DATA 16,4,15,10,14,11,7,18
1780 REM *****
1790 REM Print out
1800 REM Open window for print choice
1810 COLOR YL:LOCATE 3,26:PRINT "+-----+"
1820 FOR F=4 TO 14:LOCATE F,26:PRINT "+-----+":
    LOCATE F,26:PRINT " ":NEXT F
1830 LOCATE 15,26:PRINT "+-----+"
1840 COLOR RD
1850 IF INKEY$<" " THEN 1850
1860 LOCATE 4,28:PRINT "To print ";:COLOR YL:PRINT "ALL":
    COLOR RD:PRINT " or"
1870 LOCATE 5,28:PRINT "the file, press"
1880 LOCATE 6,28:PRINT "the ";:COLOR YL:PRINT "A":COLOR
    RD:PRINT " key. To"
1890 LOCATE 7,28:PRINT "print":COLOR YL:PRINT " just":COLOR
    RD:PRINT " this"
1900 LOCATE 8,28:PRINT "page, press the"
1910 LOCATE 9,28:PRINT " ";:COLOR YL:PRINT "P":COLOR RD:
    PRINT " key. To get"
1920 LOCATE 10,28:PRINT " back to the"
1930 LOCATE 11,28:PRINT " file ";:COLOR YL:PRINT "without":
    COLOR RD
1940 LOCATE 12,28:PRINT " printing,"
1950 LOCATE 13,28:PRINT "just press the"
1960 LOCATE 14,28:PRINT " ";:COLOR YL:PRINT "X":COLOR
    RD:PRINT " key."
1970 A$=INKEY$:IF A$=" " THEN 1970
1980 IF A$="a" OR A$="A" THEN GOSUB 2080:GOTO 2030:REM
    Print out whole file
1990 IF A$="p" OR A$="P" THEN GOSUB 2110:GOTO 2030:REM
    print out just visible page
2000 IF A$="x" OR A$="X" THEN 2030:REM Exit from routine
2010 GOTO 1970
2020 REM *****
2030 REM Restore contents of window
2040 MN=16:FOR T=LN+12 TO LN STEP -1:MN=MN-1
2050 COLOR YL:LOCATE MN,26:PRINT "+-----+":COLOR GN
2060 LOCATE MN,3:PRINT D$(T):NEXT T:RETURN
2070 REM *****
2080 REM Print out whole file
2090 FOR T=1 TO QL:LPRINT D$(T):NEXT T:RETURN
2100 REM *****
2110 REM Print out just contents of page
2120 FOR T=LN TO LN+18:LPRINT D$(T):NEXT T:RETURN

```

PC-Instruct creates a shell for building instructional programs with up to 21 lessons. Even if you're not too interested in building instructional programs, the listing has a number of other features you can incorporate into other programs – these include user-configurable colour choices (two for text, and one for the border) which are written to the disk, so the program will use those colour choices next time you run it (see lines 1470 through to 1640).



The program gets the titles of the lessons, and the names of the relevant text/question files to be used in this frame, from a file called 'Menu' which needs to be written to your disk before you run the program. There are several important things to note about a Menu file. The first item in it is the overall title of the lesson series ('Computing Made Easy' in this case). The second item, given here as 'dummy' is not used by the program. The second item in your own Menu file is not used, but must be present, so make sure you put in a dummy item in second place.

From line 3 to the end of the Menu file, the contents alternate: the odd lines (lines 3, 5, 7 and so on) are the lesson titles which appear on the screen, and the lines which follow them (4, 6 and so on) are the names of the text files to which they relate. You can have up to 21 lesson titles in your file, and the titles can be up to 38 characters long (titles which are too long are highlighted by the program; see line 430). The final item of the file must be an asterisk which is used to signal the end of the Menu file.

### Running a lesson

WHEN YOU SELECT a lesson by highlighting it on the screen, the relevant text file will load in. The screen will clear, the frame will be redrawn, and the lesson title will appear at the top of the screen in one text colour, while the lesson appears in the other text colour. You can then scan through the lesson material using the arrow keys, as well as the Home key (to

## *PC-Instruct is a program you can use to build a multitude of courses on.*

move straight to the start of the lesson) and the End key to move you to the last part of it. Page Up (PgUp) and Page Down (PgDn) are also supported by the program.

If you press the Escape key, you'll return to the menu which allows you to choose another lesson. The program will save your position within that lesson before it exits from the screen, so you can return to that point next time you run the program.

If you press the 'P' key while running a lesson, a window will drop down over the text allowing you to print all of the lesson to your printer by pressing the 'A' key, or just the displayed page by pressing the 'P' key. If you change your mind, just press 'X' and the window will scroll away. As was suggested earlier, you may wish to adapt the window routine and use it in one of your own programs.

The lessons themselves are created on a word processor as plain ASCII files. They can be up to 1000 lines long. The only restriction on the lesson files is that individual lines are no more than 70 characters long (which is longer than the default setting on most word processors for line length), and that the last line in the file,

like the final line in the Menu file, is an asterisk.

If you wish to include questions in the lesson, which must be answered before the program continues, proceed as follows. The question must fit within a single line (that is, must be less than 70 characters) and must start with a '>' symbol. When such a line appears on the screen, the program will halt until an answer has been typed in. The lesson will then continue.

I suggest that an effective lesson can be created by first presenting the lesson material as straight text, and then representing it in the second half of the lesson as a series of questions, followed by answers. The program does not have any mechanism for checking the correctness of the answer entered, although it does display the correct answer after the user has typed in their own answer.

All in all, PC-Instruct is a program you can use to build a multitude of courses on, to use in your school, or for self-instruction or revision. I'd be extremely interested in seeing any series of lessons you've created using PC-Instruct. If you want the machine code version of the program, along with the Basic version as listed here, along with the 'teach yourself about computing' lessons, just send a formatted (no system) 5.25- or 3.5-inch disk, along with \$2 for postage, to Tim Hartnell, 34 Camp Street, Chelsea 3196 Vic. The program is only available for the IBM PC and compatibles. □

## market directory

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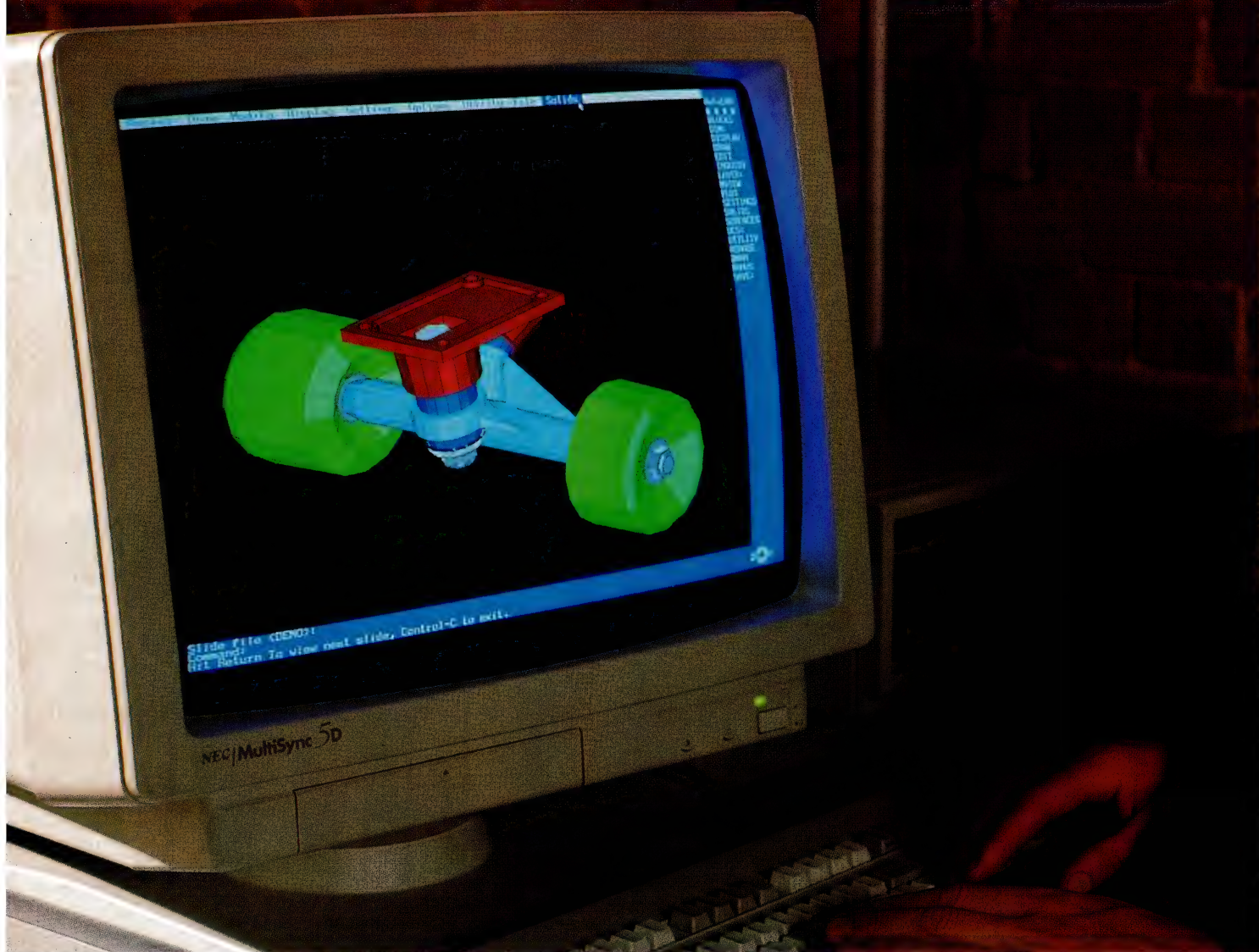


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# AUTOCAD



## RELEASE 11

Mark Casey draws on his background in computer-aided design to preview the new release of the world's top-selling PC CAD software.

**I**T'S BEEN OVER two years since the last release of AutoCad, the world's best selling computer-aided design program for PCs and workstations. In that time, user suggestions have been flooding in and the AutoCad development team has been working overtime improving what many believe is already an unbeatable product.

The good news is that with Release 11 of AutoCad, they have improved the program, particularly in the areas of networking, solids modelling and drawing output. It has added a new programming language interface, enhanced the user interface and



made many other smaller, user requested changes.

AutoCad has some 10,000 users in Australia and New Zealand, and 400,000 worldwide, running the program on PCs, under MS-Dos, XENIX, OS/2, Macintoshes, Sun, Apollo and DEC workstations. It requires a maths coprocessor, 2Mb RAM (4Mb is recommended) and 20Mb of hard disk space. A wide range of mice, digitisers, displays, printers and plotters are supported.

The difference in Release 11 is apparent at installation. Users are prompted to enter their name and the name of the dealer they obtained the system from. This information is embedded in the acad.exe file on the floppy disk and displayed whenever the program is run. Autodesk calls the process personalisation. The first and perhaps the biggest advance in the new release is its networking capability.

Previous releases of AutoCad could be installed and used on a network, but unless the network administrator set up some advanced file restrictions, more than one user was able to open the same drawing file simultaneously. The problem here was that a user could inadvertently overwrite the changes made by another user. The new release introduces file locking as a standard feature and is suitable for any type of network. When a drawing file is loaded into memory a small file with the same file name but a different extension is created. So long as that file exists, no other user can load the same drawing. Users who attempt to do so are told the file is in use. The lock file is deleted when the user is done, freeing it for another user.

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*The first and perhaps the biggest advance in the new release is its networking capability.*

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If disaster strikes, Release 11 users will appreciate the new file recovery facility. Every byte in a drawing is subject to verification when the drawing is opened using Cyclic Redundancy Check (CRC), an error checking mechanism. If a file is damaged, AutoCad will load the undamaged portion of the file, minimising the loss.

As the file recovery option will only

work with Release 11 drawings upwards, it would be a wise move to write a macro to load all non-Release 11 files and save them in the new, recoverable format.

## Enhanced interface

AUTODESK HAS MADE some excellent enhancements to the Release 11 user interface. AutoCad has a comprehensive menu system, with cascading, drop down menus and icon menus. Some of the menu titles and contents have changed. Bonus files are now shown in a menu, so there is no excuse not to use them. Two of the new bonus AutoLISP routines are DLINE.LSP which allows the creation of double parallel lines with corner clean-up and MVSETUP.LSP for creating multiple VIEWPORTS and preselected VIEWPOINTS. As menus are stored in the acad.mnu file they can be readily customised by any user.

Dialogue boxes in Release 11, used to set entity properties, layer characteristics, attributes, edit text strings and so on, have been improved dramatically. They now feature scroll bars, check boxes and text input areas. Where text extends beyond the left or right of an input area, a re-

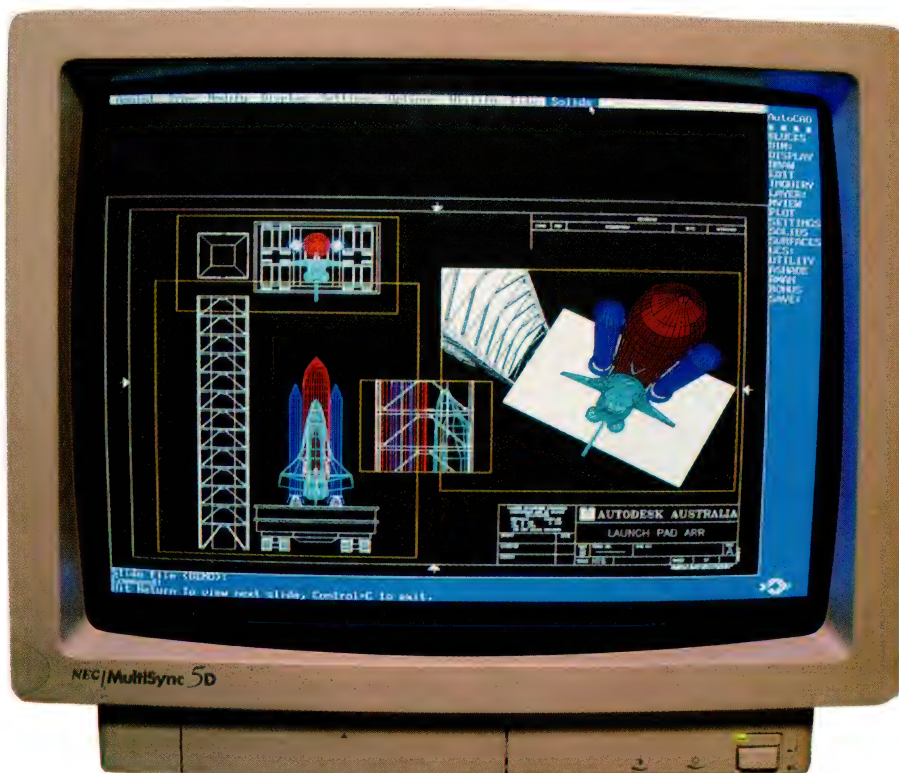
verse video arrow indicates there is more than meets the eye. A new command called DDEDIT brings up a dialogue box which allows quick on screen editing of text and attribute definitions.

Filename entry dialogue boxes can be configured to show a list of files alphabetically whenever AutoCad needs to access an external File (for example, VSLIDE or DXFIN). Too many files? No problem. The 'asterisk' (\*) character and 'question mark' (?) character can be used to control which files are shown.

Other wildcards put MS-Dos to shame. The ? and \* characters act as usual. But the 'at' (@) character matches a single alphabetic character; the 'hash' (#) character, a single numeric character; and the 'period' (.) a single character of any other type. Character ranges can be specified too. For example, [A-I]C will find files AC, BC through IC. The tilde character (~) provides the logical NOT function.

## Command aliasing

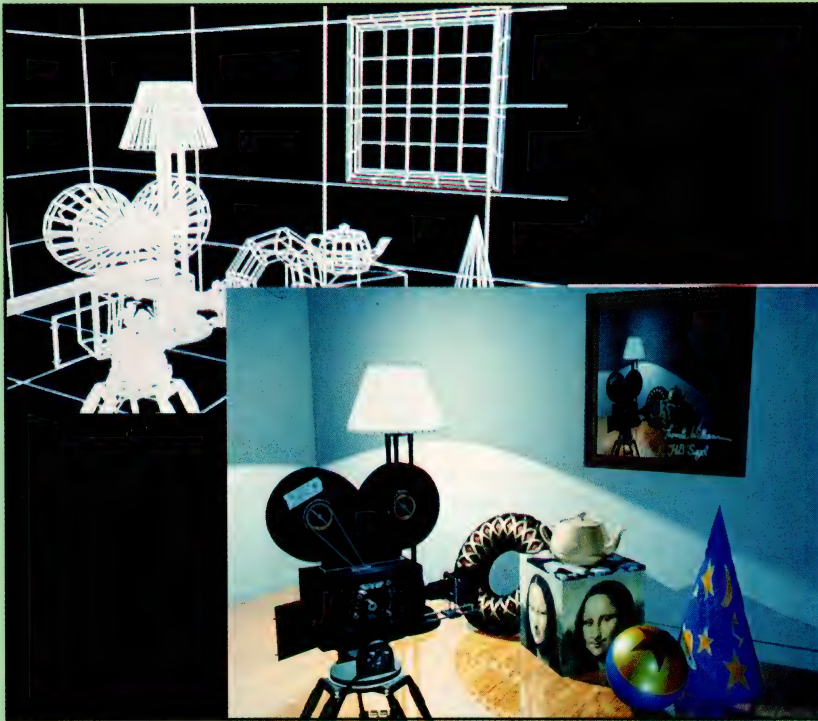
FOR THOSE WITH an aversion to typing in lengthy commands, command aliasing will come as a welcome feature. In a file called acad.pgp, any AutoCad command



*Autodesk now has an optional solids modeller, the Advanced Modelling Extension (AME), which represents solids by building up complex objects from simpler primitives.*



## RenderMan



Models can be transformed from a simple wireframe drawing to a 'photo' of what the model will look like in the real world. Glass reflects light and other objects, grass looks like grass and different materials are distinguishable from each other.

RENDERMAN IS AN about to be released rendering tool developed by Pixar, one of the world's leaders in high quality computer rendering. It can depict 3D scenes with sufficient, specific information that the images can only be described as 'photorealistic.'

Pixar's Animation Production Group is probably best-known for the creation of innovated computer animated films – 'Tin Toy', 1988 Academy Award Winner for Best Animated Short Film is one of theirs.

Having defined the RenderMan Interface Specification, Pixar then designed the renderer which Autodesk will market

as RenderMan – it should be released about the time you read this.

Autodesk's offering gives users the ability to depict, with great accuracy, how objects would look in the real world. The life-like appearance of the drawings will offer a very powerful communications tool to the likes of graphics designers, architects, engineers and others who rely on drawings to get their ideas across.

Users will need AutoCad and AutoShade to generate RenderMan images since the RenderMan shading attributes are assigned to geometrics with AutoCad and the data file is created within AutoShade.

ently unrelated lines or surfaces. Application developers might use a polyface to draw apparently complex objects which in fact have only a few entities, or to draw objects that have both wire frame and surface representations as separate layers that can be turned on or off.

Dimensioning, the automatic annotation of AutoCad drawings, has been improved significantly in the new release in response to user demands and the need to conform with international dimensioning standards. Ordinate dimensioning is a new dimensioning method that allows a dimension to be specified relative to a fixed reference point. Designers whose work is ultimately used to drive tooling machines will appreciate this facility.

*For users who forget what's what, contextual help has been improved so that it provides an on-line assistant for the current command and also sub commands.*

Different colours can now be assigned to different parts of the dimension, such as dimension lines, extension lines and text. The dimension text can now be moved from its default position and rotated with the dimension extension lines able to be set at an oblique angle. To cap all this, dimensioning styles can be saved, as a named DIMSTYLE, and applied to other drawings. This will save a considerable amount of effort in drawings which use dimensioning heavily.

Text alignment has been made simpler, yet more powerful. With Release 11, users can specify both horizontal and vertical alignments. Horizontal, left, right and centre justification is possible, vertically, text can be aligned to the top, middle or bottom of the text area, giving a total of 12 text alignment positions.

A major addition to the AutoCad feature list is the ability to use external reference files. The INSERT command is still available but it has been supplemented by the XREF command, which offers greater power and flexibility, particularly in managing large drawings.

can be assigned an abbreviation. When typed, the full command is displayed. Out of the box, AutoCad comes with several AutoCad commands already aliased. And – for users who forget what's what, contextual help has been improved so that it provides an on-line assistant for the current command and also sub commands.

Data entry has been improved in a number of small but significant ways. For instance, when entering 3D co-ordinates,

cylindrical and polar co-ordinates can now be used. In addition to an X,Y,Z co-ordinate, a user can now specify points by their distance and angle in the XY plane and either an angle up from the XY plane (spherical) or Z co-ordinate (cylindrical).

A more specialised enhancement is the addition of a new entity type, a polyface or PFACE. It produces a general polygon mesh of arbitrary topology, allowing one object to be made up of several appar-

The difference is that with XREF, the additional drawing does not become part of the current drawing and cannot be altered. Both drawings can be seen on the screen, but each is stored separately. Changes to the referenced file will be reflected in the drawing referencing it, and its entities and named objects will be temporarily added to the current drawing. Although a referenced file cannot be altered, it is possible to snap to geometric features of an object using OSNAP. The user also has complete control of layer visibility.

An XREFed drawing can be made a permanent part of the current drawing with the XREF's BIND command option. Conversely, the DETACH option removes the referenced drawing. Thanks to XREF, a drawing can reference multiple instances of the same drawing or many external drawings can be included in one drawing. For anyone who uses AutoCad in situations where the same drawing components are used repeatedly, XREF is a great enhancement.

Release 11 introduces two new terms to the AutoCad vocabulary – Model space and Paper space. Model space is the equivalent to the environment that pre-Release 11 users have been using to create their drawings. Paper space is new. It is best thought of as WYSIWYG page design for CAD. Multiple views can be plotted on a single sheet of paper, with each

---

*A more specialised enhancement is the addition of a new entity type, a polyface or PFACE.*

---

view having its own scaling, its own dimensions, its own layer characteristics, its own position and size on the page.

The paper space command, MVIEW, also works for screen display, allowing much more flexible on-screen presentations. Rectangular VIEWPORTS can be overlapped, moved, scaled and specified just like any other entity. When modelling, the active VIEWPORT is highlighted with a thick border. MVIEW options allow for hidden line removal during plotting and layer visibility in a VIEWPORT can be controlled by a new command VPLAYER.

## ADS

AUTOCAD APPLICATION developers should welcome the addition of the AutoCad Development System, ADS, which allows high level programming languages such as C to generate AutoCad applications. With ADS, an external C routine can be accessed from within AutoCad and have access to the AutoCad drawing. Routines could be developed to access external database or spreadsheet files, linking drawing objects to a bill of materials application, for instance.

The difference between ADS and AutoLISP is that the former uses compiled code, for better performance, whereas AutoLISP is an interpreter. Where a great deal of external calculation is involved, ADS can out perform AutoLISP by up to 700 per cent.

External database access may not be necessary in all situations. The new release allows up to 16K of data to be linked to an object and stored in the drawing file (Extended Entity Data). Compiled ADS programs are also more secure than the AutoLISP command lists, opening up opportunities for third party developers. Any AutoLISP program can be converted to an ADS program without too much bother.

AutoCad has always been regarded as an excellent wireframe modeller. It has also performed well as a surface modeller, where the surface of an object is represented as a grid. But both these modelling methods have shortcomings when it comes to the 3D. Solids modelling is the best form of 3D modelling for many applications. Solid models are the most accurate and informationally complete representations of 3D objects. But solids modelling has traditionally needed very expensive software and has been difficult to use.

With Release 11, Autodesk ships an optional solids modeller called the Advanced Modelling Extension. It represents solids by constructive solid geometry (CSG), building up complex objects from simpler primitives such as cubes, cones and spheres. In addition, a model's boundary information is stored. A B-rep model represents a solid object as a collection of planes or surfaces. 2D profiles may be extruded or revolved to create complex solids.

Before AME, AutoCad users would have turned to AutoSolid, currently version 3.11. This product has now been effectively integrated into AutoCad as AME. Compared to AutoSolid, AME has more primitives and uses much of the power of AutoCad, rather than its own commands.

AME is a powerful program in its own right with over 30 commands. Objects are built from primitives and profiles that can be extruded, solidified, chamfered and moved. Objects can be shown as wireframe, mesh or shaded solids with up to 256 colours. Separate objects can be combined with Boolean operators. When the primitives that make up an object are edited, changes are reflected in the combined object. And once a solid is constructed,

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*Paper space is new. It is best thought of as WYSIWYG page design for CAD.*

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AME can calculate its mass properties, areas, work out an object's centre of gravity, extract surfaces and create cross sections of an object in an instant.

But while AME is an optional extra, included in every copy of Release 11, there is also a subset of AME called Amelite. It can create primitives, and although limited in more complex commands, it gives an excellent introduction to the world of 3D modelling.

If you are already an AutoCad user, the new features of Release 11 will make an upgrade almost mandatory. If you are not an AutoCad user, the world's best PC-based CAD program has just got better! □

## Product Details

**Product:** AutoCad 11  
**Distributor:** Autodesk Australia  
 9 Clifton St,  
 Richmond 3121 Vic  
**Phn:** (03) 429 9888  
**Fax:** (03) 429 2296  
**Price:** \$5875  
 \$350 '386 version upgrade  
 \$600 Release 10 upgrade  
 \$700 AME extension  
 \$150 upgrade from AutoSolid to AME

**The good news is that with Release 11 of AutoCad, they have improved the program, particularly in the areas of networking, solids modelling and drawing output. It has added a new programming language interface, enhanced the user interface and made many other smaller, user requested changes.**



# NEW CONNECTIONS



Edited by  
Mark Cheeseman

## A LAN's Right Hand Man

A NEW PRODUCT from Com Tech Communications, Right Hand Man, is designed to make organisations' LAN workgroups more productive. Right Hand Man is a TSR, which uses as little as 4K of RAM, that allows users to quickly arrange meetings and appointments among members of even the largest workgroups.

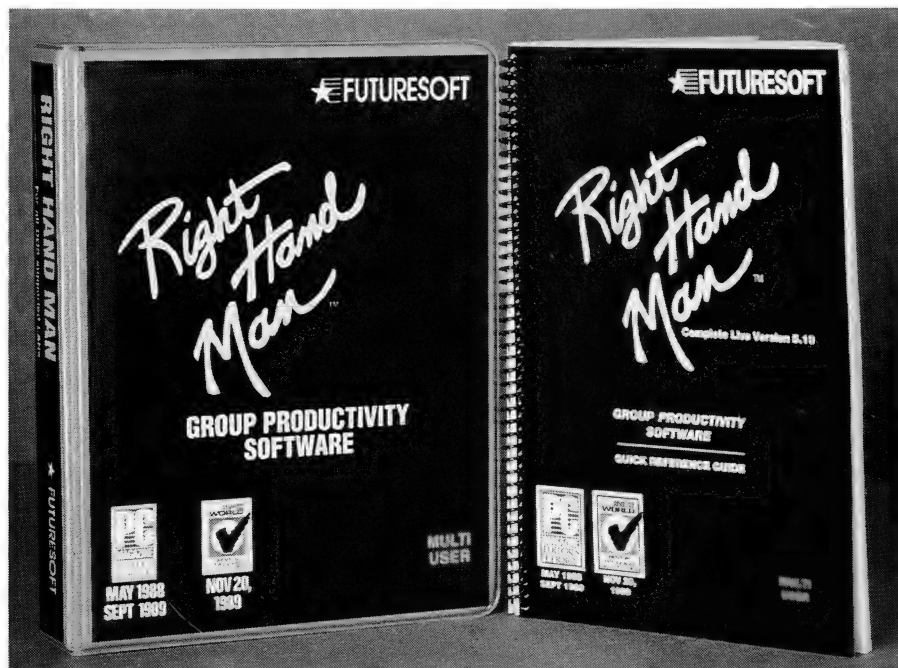
'Combined with the use of key applications such as database or accounting,

Right Hand Man is reason enough to buy a local area network,' said Com Tech Communications' Product Manager, Steve Penn.

'Right Hand Man allows users to view and manage their own and others' information. The phone message module, for example, is a key feature not found in most other group productivity software and the 4K memory requirement is a primary selling feature. People are buying Right Hand Man because it helps them get organised,' said Penn.

Features include a group scheduler, appointment scheduler, MHS-ready e-mail, WAN (multi-server) capability, real time chat mode, to-do list, phone message centre, file manager, macro keys, notepads, six calculators, a cut and paste facility, modem communication, and a print queue manager. Right Hand Man is also compatible with laptops, and has the ability to import dBase and Clipper compatible databases. Password protection is optionally available, and up to 16 windows can be displayed simultaneously. The program can also pop up over Windows 3.0, running in real, standard, or enhanced modes.

'Right Hand Man is a perfect add-on sale for a reseller either installing a new network or upgrading a user's network productivity facilities,' Penn said. For further information, contact Com Tech, (02) 317 3988.



*Right Hand Man – a windows-compatible TSR productivity manager for LAN workgroups, from Com Tech.*

## BIZTeL fax for WordPerfect

BIZTEL PRODUCTS has announced the release of a new SENDFaX fax/modem communications package designed for the WordPerfect user working with versions 4.2 and 5.1. The latest release offers end-users a new facility for transmitting WordPerfect document files direct from their PC to any Group III facsimile machine.

In addition, BIZTeL is also releasing an application interface specification package for program developers working in communication fields. The release signals the company's commitment to open architecture hardware products.

All features supported in previous SENDFaX packages, such as single or group transmissions, auto-dial facilities, ease of installation, mail merge facilities, call logging and a facsimile directory for storing numbers, are included. Also, facilities to convert ASCII text files, PCX (PC Paintbrush) IMG (GEM Artline), TIFF, and Ventura file formats, are included. Colour PCX files are also easily converted to a grey scale.

The SENDFaX modem also incorporates a 2400bps modem, for communication with electronic mail and other on-line services. The fax/modem is available from BIZTeL Products, (02) 607 0255, and carries a two year warranty on parts and labour.

## Australian fax modem for under \$400

MAESTRO, THE Australian modem manufacturer, has released a new combination fax and data modem for \$399. The new fax modem, the Maestro 9600 XR DataFax, is an external combination Hayes-compatible 2400 and 1200 baud data modem plus a Group III compatible 9600bps fax modem. The Maestro 9600 XR DataFax supports automatic answer, dialling, disconnect and baud rate selection. It is approved for connection to the Australian telephone network by Austel.

The XR DataFax is packaged complete with QuickLink II Fax, available for the IBM PC and Apple Macintosh. QuickLink II fax is a menu-driven package which can be used with either the keyboard or mouse on both the IBM PC and Macintosh. QuickLink II fax is a fully featured com-

munications program with support for DEC VT100, VT102, VT52, TTY and ANSI terminal emulations. It will upload and download files using Xmodem, Ymodem and Kermit transfer protocols. It also features on screen help and a built in text editor. A complete scripting language is standard to automate common functions such as dialling and logging on.

It also allows the modem user to send and receive faxes from the desktop, with a number of time saving features. Faxes can be sent and received in the background automatically. Automatic cover pages can be generated with an optional graphic and there is room on the cover page for a short message. A log is automatically kept of all fax transactions detailing transmission times, and status for the fax. Faxes can also be broadcast to a selected number of recipients by using QuickLink's phone book feature. Up to ten different groups can be saved, with the number of entries in each book only limited by disk space. Faxes can also be scheduled to be sent at a later time to take advantage of off peak STD and IDD rates. Files in text, TIFF, PC Paintbrush (on IBMs), MacPaint and PICT (on Macs) can be sent as faxes. Incoming files can be converted to either PC Paintbrush or TIFF. Word processed documents will retain formatting and print styles (bold, italic, underlining) by using the included Print Capture utility on the IBM version or the control panel document included for the Macintosh.

The XR DataFax requires an IBM PC, XT, AT, PS/2 or compatible or an Apple Macintosh. The IBM version requires a minimum 640K of RAM while the Mac version requires a minimum of 1Mb. It is compatible with any IBM graphic adapters (non-graphics adapters cannot display incoming faxes). Two floppy drives or a hard disk (recommended) is required. Both versions of the Maestro 9600 XR DataFax are available direct from Micro-Educational, (049) 26 4122.

### Network management specification

3COM CORPORATION and IBM have announced that their jointly developed network management specification are immediately available for industry-wide review, bolstering industry efforts to provide interoperability among different computing systems.

Interoperability is a key requirement in today's business computing environ-



ment. ALSO FROM COM Tech are two Australian-made networking and communications packages from Australian software developer, TurboSoft. Two networking and terminal emulation products, also from TurboSoft, are now being distributed by Com Tech as well. TurboTerm and TurboComms replace the traditional slow method of connecting dumb terminals or PCs through a LAN to a mainframe and enable PC users to access a variety of mainframe hosts via a local area network.

Because TurboTerm is hardware independent and has a menu-driven interface, it provides a practical and low cost solution for linking PCs to LANs and mainframe hosts. This memory resident program is multitasking, allowing users working within an application to have TurboTerm conducting file transfer in the background. Files can be transferred using either straight ASCII, or the Kermit protocol.

The ASCII file up-load mode is ideal for e-mail services, where mail can be prepared in a user's word processor and sent to an on-line host. TurboTerm can emulate VT100, VT220, WYSE 60, PT250 terminals and a host of others using PC or AT keyboards.

The second product from TurboSoft

is TurboComms, a memory resident support and communications facility for use with IBM compatible PCs, providing multitasking features similar to those available with OS/2 and UNIX.

With two PCs linked by either comms ports or modems, a communications session between PCs can be conducted allowing error free exchange of files. Applications can also be run on a remote PC and accessed by the host. A proprietary sliding window protocol ensures that all transmissions are error free regardless of the state of the communications channel being used.

The multitasking features of TurboComms allows users to toggle between a file transfer and almost any application running under Dos. A major feature of the product is its ability to operate terminal emulation cards remotely and connect to mini and mainframe computers. IBM 5250, IVM 3270, Sperry STEP, ITT 3270 and other terminal emulations requiring both hardware and software can be run remotely, allowing laptop users to dial into a PC with terminal emulation on board and then into the host computer. DEC VT52/102 emulation is also provided in TurboComms, enabling PCs to connect to mini and mainframe computers and on-line data services.

ments, where equipment from different manufacturers must work together and be managed efficiently. Publication of the IBM-3Com draft Heterogeneous LAN

Management specifications follows preliminary evaluation by technical teams of four leading computer software companies: Banyan Systems, Microsoft Corpora-



tion, Novell Inc. and The Santa Cruz Operation.

In addition, in December, the Institute of Electrical and Electronics Engineers' (IEEE) Project 802 committee for Local Area Network Standards voted to adopt the Heterogeneous LAN Management approach. IBM and 3Com will participate actively in the development of the IEEE 802.1B standard for network management, ensuring that products designed to meet these specifications work together on the same network. The standard will enable software developers to write applications that use a minimum of memory for managing both Token Ring (IEEE 802.5) and Ethernet (IEEE 802.3), two popular types of computer networks.

The Heterogeneous LAN management specifications provide the underlying structure for developing management products that function with a variety of network operating systems. They also support several interfaces for communication between the operating systems and network adapters and functions regardless of the cabling media used to connect devices on the network.

The draft Heterogeneous LAN Management specifications are available without charge from IBM and 3Com. Interested parties may obtain the specifications by calling 3Com Corporation in the US on 0011 1 408 764 5161, or writing to Jim Healy, 3Com Corporation, 5400 Bayfront Plaza, Santa Clara, CA 95052 USA or IBM Corporation, PO Box 12195, Department C13, Building 002, Research Triangle Park, NC 27709 USA.

### Macs and PCs share printer

ADVANCED COMPONENTS & Peripherals has released an electronic switching product which connects IBM (or compatibles) and Macintosh PCs to the same PostScript printer. Developed by Extended Systems, the BridgePort 2679 allows PC and Macintosh users to access the capabilities of a single PostScript printer, without leaving their desks.

The BridgePort 2679 includes an Apple Talk port for Macs and serial (RS-232) plus parallel (Centronics) ports for IBM and compatible PC connection. This allows users in a mixed PC environment to access all the capabilities from the one PostScript printer.

For Mac users, this new product opens

up a whole new range of printer choices and capabilities from either an Apple LaserWriter, Hewlett-Packard LaserJet or others. BridgePort 2679 provides LaserWriter emulation for all supported PostScript printers.

Product Manager at AC&P, Craig Scott, said the new product supports both LocalTalk or PhoneNet cabling and conforms to PAP-level Apple protocols. 'Not only does the BridgePort 2679 allow mixed PC environments to share the same PostScript printer, but it also allows a mixed environment to draw on the capabilities of all the leading-brand PostScript printers. It ensures a tremendous saving in PC and printer resources, without sacrificing the benefits of PostScript printing,' he added.

The product is also suitable for Local Area Networks (LANs) that require the sharing of resources, such as printers. The new product is easy to install, easy to use and comes with a two-year warranty from Advanced Components & Peripherals, and retails for \$875. For more information, call Advanced Components & Peripherals, (03) 720 4344.

### FrontDoor for PCs

WORKWARE AUSTRALIA, a Melbourne-based software Company, has launched Version 2.0 of the FrontDoor communications system. FrontDoor is a full featured communications software system which provides a user with advanced communications capabilities on a PC.

FrontDoor has been developed over four years and has been tested by 5000 users worldwide in a non-commercial environment. With FrontDoor a user can create a communications environment to send and receive mail, messages, files and any type of data. FrontDoor's extensive setup allows the user to change the behaviour characteristics of the system to accomplish and to accommodate virtually any contingency or type of communications. The program also allows unattended file transfers. The system automatically retries on failure to connect. During its file transfer session FrontDoor maintains full error correction. If during a file transfer session the system is interrupted and loses the file, it is able to automatically resume where it left off. It has the ability to do broadcast mail, so if a user has one memo which needs to go out to 200 people, FrontDoor can be set up to do this.

FrontDoor is easy to use and does not require any use of a script language or

login sequences. It has a simple and direct interface, permitting the user quick and easy access to all of its facilities and services.

FrontDoor can be used interactively to send and receive files or it can be used non-interactively. For example, you can schedule file transfers as an event to occur during those periods when you wish to take advantage of cheap telephone rates.

Because FrontDoor itself has no limit on the speed of how it sends and receives data, it is able to take full advantage of high speed modem technology such as PEP, HST, V32, and V42, if they are available. FrontDoor also works with standard low speed modems.

FrontDoor's philosophy is to allow the user extreme flexibility as well as being able to do things with a minimum of fuss. It is designed to save time and money. For more information, contact Workware Australia, (03) 826 7611.

### Cellular interface for Pocket Rocket

NETCOMM'S POCKET Rocket 1234 can now interface with the cellular network with the aid of a cellular phone interface cable from Melbourne-based company, AustMode. The new Intercel interface, an auto-answer cellular interface is compatible with over 20 brands of cellular phones and provides cellular network connectivity for traditionally office-bound equipment such as personal computers, fax machines and answering machines.

'Use of NetComm's Pocket Rocket is no longer limited to the availability of a telephone socket. Paired with AustMode's interface card, the Pocket Rocket is a cost effective portable solution for the increasing number of people working from their car,' says NetComm's group marketing manager Paul Heath.

With Intercel, the Pocket Rocket modem can connect laptops to other PCs or mainframes simply by dialling up from a car phone. Data transmissions should only be made from a stationary vehicle to ensure data integrity. 'The Pocket Rocket modem is positioned to satisfy the increasing need for work mobility and the development of a cellular phone interface will help us to provide end users with a mobile communications solution. Sales representatives, tradesmen, journalists, real estate agents and all professions that need to be on the road, can effectively exchange data between the company's computer

system and their portable computers, and therefore fully benefit from mobile technology,' adds Heath.

The Pocket Rocket 1234 is characterised by the functionality associated with NetComm's larger intelligent modems. It is capable of up to 2400bps operation and meets the Telecom Discovery standard of 1200/75bps. It supports the industry standard 'AT' command set for auto-dialling, auto-answer and auto-disconnect, pulse and tone dialling, modem control from a wide variety of telephone exchanges, built-in local and remote testing procedures, long term memory, and a miniature speaker to allow the user to monitor the progress of a call.

The NetComm Pocket Rocket comes complete with a rechargeable nickel-cadmium battery, mains plugpack/battery charger and car accessory adapter. The Pocket Rocket includes the NetComm program for either the Mac or MS-Dos environment.

The Pocket Rocket 1234 sells for a recommended retail price of \$649 while the Intercel interface card is available for a recommended retail price of \$349. For more information contact NetComm, (02) 888 5533.

## Primary electronic collection points

**National** – Australian BBS Registry (08) 281 0433

**ACT** – PCUG Bulletin Board (06) 259 1244

**NSW** – 2000 & Beyond AliveBBS (02) 544 7123

**Vic** – Eastwood Systems (03) 870 4623

**Qld** – The Galaxy GateWay Computer System (07) 207 8900

**SA** – Oracle PC-Network (08) 234 0791

**WA** – 1990 Multiline (09) 370 3333

**Tas** – Tassie DataBank (003) 44 9762

## BBS Listing 9012

### Sun 2 Dec 1990

New systems: 20  
Online: 5  
Unknown: 7  
Temporarily Offline: 1  
Permanently Offline: 17  
Name Change: 3  
Amended: 34  
Total Systems: 520

## NEW SYSTEMS

### AUSTRALIAN CAPITAL

#### TERRITORY

#### AG-PIPE

Sysop: Alex Reutt  
Phone: (06) 257-3398  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: Olivetti M290S  
DOS: MS DOS  
BBSoftware: RemoteAccess

#### The Wings of Hermes

Sysop: Berin Lautenbach  
Phone: (06) 288-1303  
Baud: V21 V22 V22bis V23  
BBSoftware: RemoteAccess

### NEW SOUTH WALES

#### Burk's Backyard

Sysop: Burk Mielke  
Phone: (02) 968-2725  
FidoNet: 3.712/513.309  
GTNet: 302/014  
Baud: V21 V22 V22bis V23 V32 B103 B212  
Access: Reg LVA  
Computer: IBM 386 Clone  
DOS: MS DOS  
BBSoftware: GTPower

#### KnightMoves BBS

Sysop: Wayne Hardy  
Phone: (02) 682-3538  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: SpitFire

#### The Dark Tower BBS

Sysop: Glenn Butler  
Phone: (02) 954-4943  
Baud: V21 V22 V22bis V23  
Access: Mem Reg VA

## Complete BBS Registry Listing

WE PUBLISH UPDATES – new systems and changes to the status of other systems – for the National BBS Listing every month. The complete listing is available for download from the primary electronic collection points in each state – it is about 600K compressed. If you would like a current complete listing without having to download it, send an IBM-formatted floppy disk to: BBS Listing, *Your Computer*, PO Box 199, Alexandria 2015 NSW. Registration of Bulletin Boards is only accepted electronically at the primary electronic collection points – please address all enquiries through them.

Hours: Daily: 1900 – 0700  
Computer: IBM 386 Clone  
DOS: OS/2  
BBSoftware: RemoteAccess

#### The Service Centre BBS

Sysop: Mike Kearnes  
Phone: (02) 698-1565  
GTNet: 302/023  
Baud: V21 V22 V22bis  
Access: Reg VA  
Computer: IBM 386 Clone  
DOS: MS DOS  
BBSoftware: GTPower

#### Wegapaws BBS

Sysop: Anthony & Simon Rumble  
Phone: (02) 879-7185  
SIGNet: 28.2300/112  
Baud: V21 V22 V22bis  
Access: Reg VA  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

Sysop: Margaret and David Livingston

Phone: (03) 428-7203  
FidoNet: 3.632/317  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: Wildcat!

#### Warehouse 242

Sysop: Dr. Honky & Turbo Varment  
Phone: (03) 844-3019  
Baud: V21 V22 V22bis  
Access: Public  
Hours: Fri: 2100 – 2359  
Weekends: 1300 – 1700  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

#### Windows Solutions

Sysop: Indian Summer  
Phone: (03) 770-1347  
Baud: V21 V22 V22bis V23  
Access: Reg VA  
Computer: IBM AT  
DOS: MS DOS  
BBSoftware: WWIV

## VICTORIA

#### Bear Necessities

Sysop: Gary Semmens  
Phone: (03) 302-2556  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM XT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

#### Blade Runner

Phone: (03) 882-2605  
Baud: V21 V22 V22bis V23  
Access: Public  
BBSoftware: WWIV

#### Flight Deck BBS

Phone: (03) 312-6676  
Baud: V21 V22 V22bis  
Access: Public  
BBSoftware: RemoteAccess

#### Sexylegs

Sysop: Lee Mclean  
Phone: (03) 318-3676  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

#### THE PC-TEACHER

## QUEENSLAND

#### Amiga Life Line

Sysop: Mark Robinson  
Phone: (07) 207-1876  
Baud: V22  
Access: Reg LVA  
Hours: Daily: 2300 – 1000  
Daily: 1830 – 2030  
Computer: Amiga  
DOS: AmigaDOS  
BBSoftware: TransAmiga

#### The Villan's Cave BBS

Sysop: John Vilnis  
Phone: (07) 269-8414  
Baud: V21 V22 V22bis V23  
Access: Reg VA  
BBSoftware: RemoteAccess

## SOUTH AUSTRALIA

#### CFM McAfee's BBS

Sysop: Terry Mulvaney  
Phone: (08) 362-4293  
Baud: V21 V22 V22bis V23  
Access: Public



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0 0 8 0 7 4 2 4 9

**Computer:** IBM 386sx Clone  
**DOS:** MS DOS  
**BBS Software:** Opus  
**Note:** Support for all McAfee virus protection/detection/removal products.

## Woomera Magpie

**Sysop:** Owen Hammond  
**Phone:** (086) 73-7062  
**Baud:** V21 V22 V22bis B103  
**Access:** Public  
**Computer:** IBM XT Clone  
**DOS:** MS DOS  
**BBS Software:** EXEHost

## WESTERN AUSTRALIA

### Cracker Box Palace

**Sysop:** Trev Norman  
**Phone:** (09) 439-2332  
**FidoNet:** 3.690/629  
**Baud:** V21 V22 V22bis V23  
**Access:** Mem Reg VA  
**Computer:** IBM AT Clone  
**DOS:** MS DOS  
**BBS Software:** RemoteAccess

### The Destiny Stone

**Sysop:** Simon Williamson  
**Phone:** (09) 447-6588  
**Baud:** V21 V22 V22bis B103 B212  
**Computer:** NCR 286/10  
**DOS:** MS DOS  
**BBS Software:** RemoteAccess  
**Note:** V23 baud callers please stop calling as I can't connect to that speed yet!

## UPDATES

## AUSTRALIAN CAPITAL

## TERRITORY

### The Cosmic String BBS

**Status:** Permanently Offline

## NEW SOUTH WALES

### Atari ST Users Club

**Status:** Permanently Offline

### Autodesk Animator User Group (AAUG)

**Status:** Online  
**Sysop:** Richard Williams  
**Phone:** (02) 832-3304  
**Baud:** V22 V22bis  
**Access:** Mem LVA  
**Computer:** IBM 386 Clone  
**DOS:** MS DOS  
**BBS Software:** Opus

### BAD NEWS BBS

**Sysop:** Wayne Steele & Colin Seaward  
**Phone:** (02) 587-8441  
**SIGnet:** 28.2100/123  
**Baud:** V21 V22 V22bis B103 B212  
**Access:** Mem Reg VA  
**Computer:** IBM AT Clone

**DOS:** MS DOS  
**BBS Software:** RemoteAccess

### Classic BBS

**Status:** Permanently Offline

### Club Mac Remote Maccess System

**Status:** Unknown

### Cybertron BBS

**Status:** Permanently Offline

### DefCom BBS

**Status:** Permanently Offline

### Delta Net

**Status:** Online  
**Sysop:** Geoff Arthur  
**Phone:** (02) 457-8281  
**Baud:** V21 V22 V22bis V23 V32 B103 B212  
**Access:** Reg LVA

**Computer:** IBM 386 Clone

**DOS:** PC DOS

**BBS Software:** RemoteAccess

### Disaster Area BBS

**Status:** Permanently Offline

### Easy Access GBBS

**Status:** Temporarily Offline  
**Note:** Unavailable until Jan 1991

### EDI Network BBS

**Status:** Permanently Offline

### Electronic Gazette

**Status:** Unknown

### Hypac Electronics BBS

**Status:** Temporarily Offline  
**Note:** Unavailable until further notice due to re-organisation.

### Professor Fate's Laboratory

**Sysop:** Professor Fate  
**Phone:** (02) 682-6828  
**Baud:** V21 V22 V23  
**Access:** Public  
**Hours:** Fri - Sun: 2200 - 0700  
**Computer:** IBM XT Clone  
**DOS:** MS DOS  
**BBS Software:** QuickBBS

### Quantum Infinity

**Status:** Unknown

### Railway Preservation Industries BBS

**Sysop:** Craig Dewick  
**Phone:** (02) 544-1060  
**Baud:** V22 V22bis  
**Access:** Reg VA  
**Computer:** Applix 1616  
**DOS:** 1616/OS  
**Note:** RINGBACK - call, let ring twice, and then ring back with your modem!

### SOFT-TALK BBS

**Sysop:** Aldo Ferraro  
**Phone:** (046) 26-3665  
**Baud:** V21 V22 B103 B212  
**Access:** Public  
**Hours:** Daily: 1800 - 0600  
**Computer:** IBM AT  
**DOS:** MS DOS  
**BBS Software:** Opus

### Syd PCUG - Compaq BBS

**Sysop:** Bruce Edney

**Phone:** (02) 540-1842  
**FidoNet:** 3.712/505  
**Baud:** V21 V22 V22bis V23 V32  
**Access:** Mem Reg LVA  
**Computer:** Compaq  
**DOS:** PC DOS  
**BBS Software:** Opus

### Syd PCUG - IBM BBS

**Sysop:** John Clarke  
**Phone:** (02) 724-6813  
**FidoNet:** 3.712/505 2  
**Baud:** V21 V22 V22bis V23  
**Access:** Mem Reg LVA  
**Computer:** IBM AT  
**DOS:** PC DOS  
**BBS Software:** Opus

### Syd PCUG - QUINDEM BBS

**Sysop:** Chris Kelly  
**Phone:** (02) 698-8769  
**FidoNet:** 3.712/602  
**Baud:** V21 V22 V22bis V23 V32  
**Access:** Mem Reg LVA  
**Computer:** IBM PC Clone  
**DOS:** PC DOS  
**BBS Software:** Opus

### Sydney Data Exchange

**Status:** Permanently Offline

### TechComm BBS

**Sysop:** Darren Blackley  
**Phone:** (02) 628-7559  
**FidoNet:** 3.713/802

**SIGnet:** 28.2500/1  
**Baud:** V21 V22 V22bis V23  
**Access:** Mem Reg  
**Computer:** IBM XT Clone  
**DOS:** MS DOS  
**BBS Software:** RemoteAccess

### The Accumulator BBS

**Sysop:** Brendan Heffernan  
**Phone:** (02) 520-3219  
**Baud:** V21 V22 V22bis V23  
**Access:** Reg LVA  
**Hours:** Daily: 0630 - 2230  
**Computer:** IBM AT Clone  
**DOS:** MS DOS  
**BBS Software:** RemoteAccess

### The Lost Tavern

**Sysop:** Sean Murphy  
**Phone:** (02) 905-7300  
**FidoNet:** 3.714/902  
**Baud:** V21 V22 V22bis V23  
**Computer:** IBM XT Clone  
**DOS:** PC DOS  
**BBS Software:** TBBS

### The WEB

**Status:** Permanently Offline

## VICTORIA

### Antarctic Crystal

**Status:** Permanently Offline

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**FAX: (07) 203 6053**



## **Austcom Image**

Sysop: Captain  
Phone: (03) 752-0109  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: C-64  
DOS: Lt. Kernal  
BBSoftware: Image

## **Dark Crystal**

Sysop: Paul Sanders  
Phone: (03) 720-7724  
FidoNet: 3:633/104  
MultiNET: 9:2469/301  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **Disintegration BBS**

Note: Now called the Rebels HQ.

## **Eastern Online BBS**

Sysop: Dean Galloway  
Phone: (03) 872-4958  
FidoNet: 3:633/201.2  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM XT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **Eastwood Systems**

Sysop: Mick Stock  
Phone: (03) 870-4623  
FidoNet: 3:632/300  
Baud: V22 V22bis  
Access: LVA File Server  
Hours: Daily: 1200 - 2359  
Computer: IBM AT clone  
DOS: PC DOS  
BBSoftware: PCBoard

## **EasyAccess**

Sysop: Garry Gillard  
Phone: (03) 585-0495  
FidoNet: 3:636/200  
SIGnet: 28:4200/31  
Baud: V22 V22bis V32  
Access: Public  
Hours: Daily: 1730 - 0200  
Computer: IBM 386  
DOS: MS DOS  
BBSoftware: Wildcat!

## **EUPHORIA BBS**

Sysop: AYLA  
Phone: (03) 534-0922  
Baud: V21 V22 V22bis V23  
Access: LVA  
Computer: IBM XT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **High Voltage**

Status: Unknown

## **Jeff's Amiga Board**

Sysop: Jeff Stevenson  
Phone: (051) 26-1031  
FidoNet: 3:633/355  
Baud: V21 V22 V22bis V23 V32  
Access: Mem Reg  
Computer: Amiga 2000  
DOS: Amiga DOS  
BBSoftware: Paragon

## **MODEMEX BBS**

Status: Online  
Phone: (03) 331-0385  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: Tandy 1000a  
DOS: PC DOS  
BBSoftware: QuickBBS

## **Melbourne Data Exchange**

Status: Unknown

## **Micronet Information System**

Status: Online  
Sysop: Luke Groeneveld  
Phone: (03) 741-9055  
FidoNet: 3:635/505  
SIGnet: 28:4100/13  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: Philips 386/33  
DOS: MS DOS

## **MicroSys Software**

Sysop: Miklos Bolvary  
Phone: (03) 887-1756  
FidoNet: 3:634/382  
Baud: V22 V22bis B103 B212  
Access: Reg LVA  
Hours: Daily: 2130 - 0930  
Computer: IBM 386 Clone  
DOS: PC DOS  
BBSoftware: RemoteAccess

## **Nemesis BBS**

Sysop: Riddler and Amphion  
Phone: (03) 331-1155  
Baud: V21 V22 V22bis V23  
Access: Mem LVA  
Computer: IBM 386 Clone  
DOS: MS DOS  
BBSoftware: MajorBBS

## **S.I.G**

Sysop: Avatar & Tikva  
Phone: (03) 888-8846  
Baud: V21 V22 V22bis V23  
Access: Mem Reg LVA  
Computer: IBM 386 Clone  
DOS: PC DOS  
BBSoftware: RemoteAccess

## **Swinestud**

Status: Online  
Sysop: Craig Silva  
Phone: (03) 819-9008  
FidoNet: 3:633/363  
Baud: V21 V22 V22bis V23  
Access: Reg VA  
Computer: IBM XT Clone  
DOS: MS DOS  
BBSoftware: QuickBBS/Opus

## **Telegraph Road**

Status: Unknown

## **The Image**

Status: Unknown

## **The Keep**

Sysop: Stuart Marburg  
Phone: (03) 822-2919  
FidoNet: 3:633/402  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: Macintosh +  
DOS: HFS  
BBSoftware: FBBS

## **The Lightning BBS**

Sysop: Thunder  
Phone: (03) 399-1030  
FidoNet: 3:635/524  
SIGnet: 28:4100/24  
Baud: V21 V22 V22bis V32  
Access: Reg LVA  
Computer: IBM 386 Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **The Phantom**

Status: Permanently Offline

## **The Real Connection**

Sysop: The Real Article & Deep Image  
Phone: (03) 808-0810  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: IBM XT Clone  
DOS: DoubleDOS  
BBSoftware: RemoteAccess

## **The Rebels HQ**

Sysop: Jim Richardson & Stephen Youle  
Phone: (03) 723-7492  
FidoNet: 3:633/352  
Baud: V21 V22 V22bis V23  
Access: Public  
Computer: Amiga 500  
DOS: AmigaDOS  
BBSoftware: Paragon

## **The Roaring Rapids**

Sysop: Greg Holloway  
Phone: (03) 877-2609  
FidoNet: 3:633/203  
Baud: V21 V22 V22bis V23 V32 B103 B212  
Access: Reg LVA  
Computer: Epson PCe  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **The Underground**

Sysop: Moz  
Phone: (03) 840-1565  
Baud: V21 V22 V22bis V23  
Access: Mem Reg LVA  
Computer: IBM XT Clone  
DOS: PC DOS  
BBSoftware: DLX  
Note: Members only between: 2000 - 2359

## **The Wastelands**

Sysop: Colin Berg  
Phone: (03) 309-4047  
FidoNet: 3:635/501  
SIGnet: 28:4100/15  
Baud: V22 V22bis  
Access: Reg LVA  
Computer: Pulsar 386  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **The Witche's Brew**

Status: Unknown

Status: Permanently Offline

## **DISTRIBUTOR BBS**

Sysop: Steven Dunk  
Phone: (08) 341-5255  
Baud: V21 V22 V22bis V23 V32 HST  
Access: LVA  
Computer: IBM 386 Clone  
DOS: MS DOS  
BBSoftware: TBBS 16 Line

## **Multiple System BBS**

Status: Permanently Offline

## **S A C BBS**

Status: Permanently Offline

## **The Realm V**

Status: Permanently Offline

# WESTERN AUSTRALIA

## **ACCESS Australia**

Sysop: Lindsay Blume  
Phone: (09) 250-1854  
FidoNet: 3:690/634  
SIGnet: 28:3100/1  
Baud: V21 V22 V22bis V23 V32 B103 B212  
Access: Reg LVA  
Computer: IBM AT Clone  
DOS: MS DOS  
BBSoftware: RemoteAccess

## **Binary Bulletin Board System**

Status: Permanently Offline

## **NSS Australia**

Sysop: Andrew Waite  
Phone: (09) 350-5185  
FidoNet: 3:690/630  
Baud: V21 V22 V22bis V32  
Access: Reg VA  
Computer: IBM 386 Clone  
DOS: MS DOS  
BBSoftware: Maximus

## **OGRE BBS**

Phone: (09) 247-1249  
Baud: V21 V22 V22bis  
Access: Reg VA  
Computer: Atari ST  
DOS: TOS  
BBSoftware: Michtron

## **Online Australia**

Note: Now called NSS Australia.

## **Split Infinity**

Status: Permanently Offline

## **Tower BBS**

Note: Now called ACCESS Australia.

## **WEST-SIDE BBS**

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IAN  
ALLEN

# The price of peripherals

**L**AST WEEK I was late-night shopping in a department store, comparing various computers, when a salesman came up and said something that really stunned me: 'They're not computers, they're appliances'. Appliances? Like a washing machine or a Kitchen Whiz? Have we really come so far?

It's been quite a phenomenon, the way computers have defied inflation and continued to become cheaper, year after year. Part of the reason for that is obviously technology, part of it is competition and part of it is the sheer size of the market. If computers have become 'appliances', the volume must be extraordinary.

But however great the volume, it's interesting to note that this phenomenon of price reduction seems to be confined to the computers themselves. Apart from disk drives, the story with peripherals is not quite so rosy. If you shop around for monitors, printers or modems, you'll find that the entry prices haven't changed all that much in dollar terms. You're still looking at \$400 to \$500 for a colour monitor, slightly less for a printer and \$300 to \$400 for a modem.

Admittedly the dollar is worth a lot less these days, but the point is that for low-end computer users (that's us! C-64/128 owners), the cost of peripherals is often more than that of the computer. It's a situation that's unlikely to change because there is no reason for peripheral manufacturers to cater to low-end users unless the product is machine dependent, and few peripherals really are. A dot matrix printer is a dot matrix printer no matter which computer it is plugged into, so why cut the price for low-end users when you could sell the same machine to someone who will comfortably pay more?

Now the C64/128 uses a non-standard RS-232 port and a non-standard serial bus for the printer. You can buy modems and printers with the Commodore interface built-in, or you can buy interface cartridges which will allow you to use any modem or printer. At first sight it seems simpler and cheaper to go for peripherals which plug straight into the Commodore. At least you know they will work first time,

and that's the road I took when setting up my system. The catch is that if you ever decide to buy a different computer, you will have to replace all of your peripherals as well. That exercise will cost you much, much more than if you had just bought standard peripherals with an interface cartridge.

---

*You don't need an expensive computer to produce good looking documents, but you do need a good printer.*

---

### Printers

I'M SPEAKING from personal experience, having recently added an IBM compatible to my computer family and facing the reality of needing to purchase a second set of peripherals. It's not just the cost, but also the practical problem of space to put it all in. Fortunately, I have access to an IBM compatible printer at work, and that's where I mostly use the IBM anyway (it's a portable) but if I'm working at home and want to print out one of my IBM files, it's a complicated exercise. My DPS 1101 printer will only respond to the C-128, but since the 128 and the IBM both have serial ports, I can link the two via a null modem. This means I can send my IBM file to the Commodore, and from that machine do a printout. The only catch is that the file has to be unformatted ASCII text, which means I have to fire up my CBM word processor to do a quick edit to re-insert underlining and so on. It's a lot of fiddling just to get a printout. How I wish I'd bought a printer which could work with both machines.

Since the Amiga was released, Commodore have been selling a 9-pin dot matrix printer, the MPS 1250, which has both a

CBM serial port and a standard Centronics port. It retails for around \$400, but is about to be superseded by the MPS 1230 which will retail for slightly less. Citizen also market a similar model with both Commodore and Centronics interfaces. The manufacturers claim these printers are near letter quality (NLQ), and although they're being a little generous with the word 'near', the printers are perfectly adequate for general purpose printing and graphics dumps. They also represent the cheapest way to have a printer you can keep if you ever change computers. They will work with all personal computers.

If you want a more up-market printer with multiple fonts and features, you'll have to spend \$500 or more and in addition to that acquire an interface cartridge. Xetec makes three different models. The base one starts at \$120. This adds up to a lot of dollars for something which plugs into a cheap computer, but what you are buying is presentation quality. You don't need an expensive computer to produce good looking documents, but you do need a good printer. If presentation quality matters to you, it's well worth it. You may pay extra for the interface cartridge, but it means your investment in the printer doesn't become worthless should you ever need to change computers.

### Monitors

ANOTHER HIGH cost peripheral is a colour monitor. These actually cost more than a portable colour TV, and for C-64 owners the TV is better value. C-128 owners have the problem that a colour TV won't give them 80-columns. Monitors are the only real option for 80-column work. Commodore markets the 1901 colour monitor for the 128, which can be switched between 40 and 80 column modes. But judging from user experience the best choice to go for seems to be the Amiga 1084D monitor. This is an excellent quality monitor with input jacks for the 64/128 (40 or 80 columns), the Amiga, IBM compatibles (CGA colour graphics) and for the Atari ST. Its RRP is \$699 but if you

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- ☐ Lotus Agenda
- ☐ WordStar 5.5
- ☐ Xerox Ventura 2.0
- ☐ Aldus PageMaker 3.0
- ☐ Upgrading & Troubleshooting your PC
- ☐ Lotus 1-2-3 Ver 2.01
- ☐ Lotus 2.2
- ☐ Lotus 3.0
- ☐ MS-Windows 2.0, 3.0
- ☐ dBase IV
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**PC1027 THESAUR PLUS:** Memory resident thesaurus. Program allows you to seek a synonym for any word within almost any application at the press of a button.

**PC1046 LEARN A FORM:** Program allows you to easily fill in pre printed forms using your PC and a standard printer. You train your computer to learn each form and store the image on disk. you then produce a data file with the information required to fill in the form, and the program does the rest.

**PC1255 PHONE PRO:** Excellent personal address book manager. You can access information quickly using the optimised search functions, and the program will even dial the number if used with a Hayes compatible modem.

**PC1273 VIDEO LIBRARIAN:** Fast, easy to learn database manager that will help you to organise and keep track of your video library. Quickly search for titles, stars, etc. and print detailed reports. The program will even print labels for your video cassettes.

**PC1612 ACCOUNTING-101:** Easy to use accounting package for small business and home use. Allows you to keep track of cheques, deposits, accounts payable, and provides income statements and balance sheets.

**PC1648 PC BILLING:** Invoicing system for small business use. Prints invoices on standard continuous feed paper. Using a simple data entry screen you can enter billing information quickly and efficiently. The program will keep track of payments and overdues, and provide a number of reports.

**PC1727 EASY QUOTE:** Price quoting program suitable for use in businesses with a single unit price for items. Two overhead factors are provided for. Printed quotes can also be used as billing invoices. Requires 512K RAM.

**PC1742 CASH REGISTER & INVENTORY:** Point of sale inventory system for retailers. You enter the relevant company and inventory information. When you enter a sale the program provides the relevant information and updates the inventory and sale records. A number of reports are available including stock lists, sales reports, customer details and more. Requires Hard Disk.

**PC1762 STOCK PORTFOLIO:** Program stores, manipulates, and prints records needed to manage a portfolio of stocks. A variety of useful reports can be produced.

**PC1804 RESUME SHOP:** Great resume creation tool. Menu driven package allows you to fine tune your resume by selecting areas to include. A number of sample files are also provided.

**PC1854 RENTALS:** Fast and friendly rental management system that requires no formal accounting knowledge. Reports available include property reports, general journal, and general ledger. Requires 512K RAM.

**PC1878 MEMTOOL:** Memory resident desktop utility which provides a calculator, a calendar and appointment scheduler, a file editor with facilities such as search and replace, a DOS guide, a facility to search for a file or group of files, a phone directory, an alarm clock, an ASCII table, a pop up ruler, and a screen capture utility.

*more on next page*

# Call Budgetware

**PC2017 JAPANESE GO:** Program based on the popular Japanese board game GO. Similar to checkers in many respects this game requires strategy and clear thinking to play. Comprehensive documentation is included on how to play the game.

**PC2059 PROTON WARRIORS:** Arcade style battle simulation, set in a maze type playfield using hand phaser weapons. Good graphics and sound effects make for great fun.

**PC2071 DR SLEEPTITE:** Graphics game where you as Restless Ralph Runabout must stop the evil Dr Sleptite from producing his evil nightmare capsules at his nightmare factory.

**PC2073 RACE!:** Miniature car racing game. The cars can accelerate, decelerate, or turn through the race course whilst avoiding the various obstacles. You can use one of the tracks provided, or produce your own customised track.

**PC2129 ALICE IN WONDERLAND:** Adventure game based on the Lewis Carroll novel. You must find your way through Wonderland whilst examining its contents.

**PC2131 LOST ADVENTURES OF KROZ:** Great sequel to Kingdom of Kroz. Action packed adventure game has 75 levels with animation, gravity wells, and many more dangers to withstand before finding the sacred Tome of Kroz.

**PC2312 STARLORD:** Interesting space trading game. You must travel through the universe on your star ship seeking goods to trade, whilst avoiding the aliens.

**PC2611 EGA MAH JONG:** Based on the ancient Chinese tile game this great graphic game provides hours of entertainment and brain stimulation. Requires EGA/VGA graphics.

**PC2720 VGA ROBOTS FROM HELL:** Arcade action game utilising high resolution VGA graphics to great effect. Avoid the evil robots whilst attempting to save the planet. Requires VGA graphics.

**PC3073 ZIP FILE TRANSFER:** Tiny fast utility to transfer files between two PCs at speeds up to 14K per second. Allows you to view directories on both machines, and select files to transfer.

**PC3114 WYND SHELL MENU SYSTEM:** Menu program allows you to create easy to use menus to run your applications. Also includes utility to allow you to perform common DOS tasks quickly and easily.

**PC3177 BACPLUS BACKUP UTILITY:** Menu driven backup utility. Prompts user at every step for ease of use. Handles files of all sizes, and formats disks as they are needed.

**PC3179 AUTOSAVE:** Memory resident utility that automatically saves your work as you go. The program is flexible as you configure it for your relevant application.

**PC3223 CON FORMAT:** Memory resident utility you can pop up over any application and use to format a disk without having to return to DOS.

**PC3403 PCP PRINTER CONTROL:** Memory resident printer control program. Allows you to easily send printer commands from within any application.

**PC3416 LUM SIDEWAYS PRINT UTILITY:** Memory resident pop up sideways printing utility for use with spreadsheets and text. Supports reverse highlighting, superscript, subscript, and up to eight types of underlining and overstriking as well as extended ASCII on an EPSON compatible printer.

**PC5402 PRINTER PARTNER:** Excellent shareware clone of PrintMaster and PrintShop. This program will allow you to produce banners, signs, and calendars for any event. Graphics and fancy fonts can be used to great effect, and most dot matrix printers are supported. Includes utility to convert PrintMaster graphics for use with the program.

**PC5303 GRAPHICS WORKSHOP:** Program allows you to convert graphics files between formats. Formats include MACPAINT, PCX, GEM/IMG, GIF, TIFF, and EPS files. You can view files on screen, or print to a laser printer.

**PC7304 FAMILY TIES:** Genealogy program recommended by the MORMON church for use in keeping track of family records. Wide range of reports and easy data entry make this a great program.

**PC8012 BRANDON'S LUNCHBOX:** Series of educational games for 3 to 7 year olds. Designed to aid in letter identification, memory development, counting, problem solving, and basic addition.

**PC8028 WORD GALLERY:** Educational program designed to help children associate the printed word with the object it describes, by providing a series of colourful word object flashcards. Suitable for ages 4 to 7.

**PC8083 FLAGS OF THE WORLD:** Educational program for all ages. Allows you to view on screen the National flags of all 170 independent nations of the world, plus more. Also you can access information about the country.

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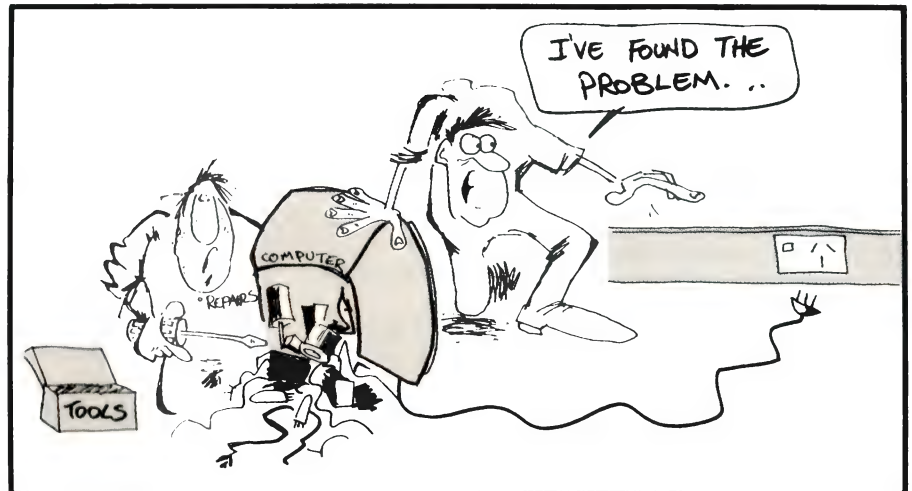
### Modems

THE OTHER peripheral that matters is the modem. As I mentioned earlier, the C-64/128 uses a non-standard RS-232 port. Modems like the one I have, the NetComm 64/128, have the necessary conversion circuit built-in but for this very reason they will not work on other types of computers. Buy a new computer and you need a new modem. Even with two computers and two modems, it's pretty difficult to link them up without having two telephones. The cheapest and easiest way to transfer text data between two incompatible computers is with a null modem. This is basically a plug that you can buy from any electronics store, but by itself it won't work with the 64/128. You also have to convert the non-standard RS-232 interface into a normal one.

If you have the know-how you can build such an interface for about \$25. If you don't, you can buy one for about \$90 from Computer One in Randwick, Sydney, (02) 399 8865. In my case I've been fortunate.

About 18 months ago I was talked into buying a Maestro Bit Stream Flyer, a no frills 1200/1200 baud modem. It was cheap at the time, \$199 (and still is) but it came without a Commodore interface. The friend who talked me into buying it built an interface into the cable to join the modem to the computer. It worked beautifully. At the time I had no idea I would

ever end up buying another computer, but it turned out that my friend did me a much bigger favour than I realised. Of all my peripherals, the Bit Stream Flyer is the only one that works with the IBM compatible. The RS-232 interface hasn't gone to waste either. It's the only reason I've been able to use a null modem to get the two computers to talk to each other. □



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## '286 Desktop Machines

### Rovex Update



#### Rovex Systems

Phn: (008) 07 4249;  
Fax: (075) 93 2577

### 12MHz 80286 Kate 286/12

Std. RAM: 1Mb  
Max. onboard RAM: 4Mb  
Operating system: Dos 3.3  
Hard drive: 20Mb IDE  
Bus: ISA  
Floppy drive: 1 x 5.25-inch and 3.5-inch  
Serial ports: 1  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 2 internal; 3 external access (standard AT case; baby and mini-tower also available)  
Expansion slots: 2 8-bit, 6 16-bit, (6 free)  
Power supply: 200 watts  
Display: EGA  
Keyboard: 101 keys  
Other: 24-pin dot matrix printer, Simon word processor, SimCity and ECP games pack included  
Warranty: 12-months  
Price (rrp): \$2999

## '386 Desktop Machines

### Acer Update

#### Acer Australia

Phn: (02) 899 6644;  
Fax: (02) 899 6576

### 20MHz 80386SX Model 1120SX

Std. RAM: 1Mb  
Max. onboard RAM: 8Mb  
Operating system: Dos 4.01  
Hard drive: 28ms 40Mb  
Bus: ISA  
Floppy drive: 1 x 1.2Mb 5.25-inch  
Serial ports: 1  
Parallel ports: 1  
Front panel reset/power switches: Yes/No  
Half-height devices: 4 external access  
Expansion slots: 4 16-bit (all free)  
Power supply: 145 watts  
Display: VGA  
Keyboard: 101 keys  
Other: Windows 3.0; MS Mouse  
Warranty: 12-months  
Price (rrp): \$5108; \$4077 no hard disk

### Rovex Update

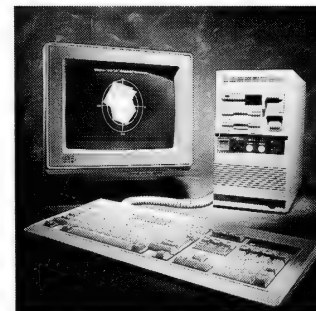


#### Rovex Systems

Phn: (008) 07 4249;  
Fax: (075) 93 2577

### 16MHz 80386SX Bianca 386/sx

Std. RAM: 1Mb  
Max. onboard RAM: 8Mb  
Operating system: Dos 3.3  
Hard drive: 40Mb IDE  
Bus: ISA  
Floppy drive: 1 x 5.25-inch and 3.5-inch  
Serial ports: 1  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 2 internal; 3 external access (standard AT case; baby and mini-tower also available)  
Expansion slots: 2 8-bit, 6 16-bit, (6 free)  
Power supply: 200 watts  
Display: EGA  
Keyboard: 101 keys  
Other: 24-pin dot matrix printer and fax card included  
Warranty: 12-months  
Price (rrp): \$3699



#### Rovex Systems

Phn: (008) 07 4249;  
Fax: (075) 93 2577

### 25MHz 80386 Bianca 386/25

Std. RAM: 1Mb  
Max. onboard RAM: 16Mb  
Cache: 64K; optional 256K  
Operating system: Dos 3.3  
Hard drive: 65Mb RLL  
Bus: ISA  
Floppy drive: 1 x 5.25-inch and 3.5-inch  
Serial ports: 1  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 2 internal; 3 external access (standard AT case; baby and mini-tower also available)  
Expansion slots: 2 8-bit, 6 16-bit, (6 free)  
Power supply: 200 watts  
Display: EGA  
Keyboard: 101 keys  
Other: 24-pin dot matrix printer and fax card included  
Warranty: 12-months  
Price (rrp): \$4499

#### Rovex Systems

Phn: (008) 07 4249;  
Fax: (075) 93 2577

### 33MHz 80386 Bianca 386/33

Std. RAM: 1Mb  
Max. onboard RAM: 16Mb  
Cache: 64K; optional 256K  
Operating system: Dos 3.3  
Hard drive: 65Mb RLL  
Bus: ISA  
Floppy drive: 1 x 5.25-inch and 3.5-inch  
Serial ports: 1  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 2 internal; 3 external access (standard AT case; baby and mini-tower also available)  
Expansion slots: 2 8-bit, 6 16-bit, (6 free)  
Power supply: 200 watts  
Display: EGA  
Keyboard: 101 keys  
Other: 24-pin dot matrix printer and fax card included  
Warranty: 12-months  
Price (rrp): \$6299

## '486 Desktop Machines

### AVO Update

#### AVO Electronics

Phn: (02) 906 2655;  
Fax: (02) 906 2735

#### 25MHz 80486 Model 486/25

Std. RAM: 4Mb  
Max. onboard RAM: 32Mb  
Cache: 32K  
Operating system: Dos  
Hard drive: 28ms 40Mb  
Bus: ISA  
Floppy drive: 5.25-inch or 3.5-inch (add \$138 for both)  
Serial ports: 2  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 1 internal; 3 external access (baby AT case; tower also available)  
Other I/O: Joystick  
Expansion slots: 3 16-bit, 3 32-bit (5 free)  
Power supply: 180 watts  
Display: NEC MultiSync 2A  
Keyboard: 101 keys  
Warranty: 12-months  
Price (rrp): \$4860

### Acer Update

#### Acer Australia

Phn: (02) 899 6644;  
Fax: (02) 899 6576

#### 25MHz 80486 Model 1170

Std. RAM: 4Mb  
Max. onboard RAM: 64Mb  
Operating system: Dos 4.01  
Hard drive: 25ms 100Mb  
Bus: ISA  
Floppy drive: 1 x 3.5-inch  
Serial ports: 2  
Parallel ports: 1  
Front panel reset/power switches: Yes/No  
Half-height devices: 4 external access  
Expansion slots: 4 16-bit (all free)  
Power supply: 145 watts  
Display: VGA  
Keyboard: 101 keys  
Other: Windows 3.0; MS Mouse  
Warranty: 12-months  
Price (rrp): \$14,112; \$12,388 no hard disk

### Everex Update



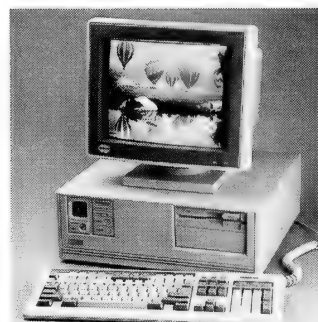
#### Australia Everex Systems

Phn: (02) 427 6111;  
Fax: (02) 427 5948

#### 33MHz 80486 Step 486/33

Std. RAM: 4Mb  
Max. onboard RAM: 32Mb  
Operating system: Dos  
Hard drive: N/S  
Bus: ISA  
Floppy drive: 1 x 1.2Mb 5.25-inch  
Serial ports: 2  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 2 internal; 2 external access  
Expansion slots: 1 8-bit, 6 16-bit, 1 32-bit (7 free)  
Power supply: 300 watts  
Display: VGA  
Keyboard: 101 keys  
Warranty: 12-months  
Price (rrp): \$21,360

### Kambrook Update



#### Kambrook

Phn: (03) 543 2200;  
Fax: (03) 543 3208

#### 25MHz 80486 Kambrook 486

Std. RAM: 2Mb  
Max. onboard RAM: 16Mb

Operating system: Dos  
Hard drive: 28ms 40Mb (80 and 300Mb available for file server version)  
Bus: ISA  
Floppy drive: 1 x 1.2Mb 5.25-inch  
Serial ports: 2  
Parallel ports: 1  
Front panel reset/power switches: Yes/Yes  
Half-height devices: 1 internal, 2 external  
Expansion slots: 1 8-bit, 6 16-bit, 1 32-bit (7 free)  
Power supply: 250 watts  
Display: VGA  
Keyboard: 101 keys  
Other: 80387 co-processor included  
Warranty: 12-months  
Price (rrp): \$12,135

## Laptops & Portables

### Acer Update

#### Acer Computer

Phn: (02) 899 6644;  
Fax: (02) 899 6576

#### 20MHz 80386SX 1100NX AnyWhere notebook

Std. RAM: 1Mb  
Max. onboard RAM: 5Mb  
Operating system: Dos 4.01  
Hard drive: 20Mb  
Bus: ISA  
Floppy drive: 1 x 3.5-inch  
Serial ports: 2  
Parallel ports: 1  
Display: VGA back-lit LCD  
Keyboard: 84 keys  
Other: LapLink  
Weight: 3.2kg  
Power: Mains; battery (3.5hr)  
Warranty: 12-months  
Price (rrp): N/S

### Arima Update

#### Arima Update

Phn: (02) 313 6155;  
Fax: (02) 313 6143

#### 16MHz 80386SX ACT386SX

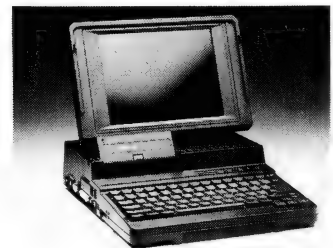
Std. RAM: 1Mb  
Max. onboard RAM: 4Mb  
Operating system: Dos  
Hard drive: 24ms 40Mb



Bus: ISA  
Floppy drive: 1.44Mb 3.5-inch  
Serial ports: 2  
Parallel ports: 1  
Other I/O: External drive, external VGA monitor  
Expansion slots: 3 8-bit, 2 16-bit, 1 32-bit (all free)  
Display: VGA  
Keyboard: Removable 84 keys  
Weight: 5.8kg with battery  
Power: Mains and battery  
Warranty: 12-months  
Price (rrp): \$4695

### Sharp Update

#### Sharp Corporation



Phn: (02) 831 9111;  
Fax: (02) 831 1608  
**20MHz 80386SX PC-5741 laptop**  
Std. RAM: 2Mb  
Max. onboard RAM: 12Mb  
Operating system: Dos 4.01  
Hard drive: 40Mb; optional 120Mb  
Bus: ISA  
Floppy drive: 1 x 3.5-inch  
Serial ports: 1  
Parallel ports: 1  
Display: VGA super-twist LCD  
Keyboard: 84 keys  
Other: LapLink  
Weight: 6.3kg  
Power: Mains; battery (2hr; 5hr with optional battery pack)  
Warranty: 12-months  
Price (rrp): \$7995



## Power from Datamatic



MANUFACTURED BY US-based Tricord Systems, the new PowerFrame range of 'super-servers' use one or more '486 chips for processing power, an optional i860 for complex numerical application processing and one or more '386 chips to control I/O processing to multiple drives and channels.

Announcing the PowerFrame range, Datamatic's managing director Brian Killen, said that the difference with these servers is that 'PowerFrame architecture is completely open to third-party hardware and software – it's based on EISA and the Small Computer System Interface (SCSI). The backbone of the system is its 132Mbps data bus which takes one or two '486 processors or one '486 and one '860. In addition, up to 128Mb of RAM is supported on the main board.'

Unique to the PowerFrame is its Intelligent I/O Processor (IIOP) which runs on '386 chips and offloads about 90 per cent of the input/output processing from the main processor. The IIOP has two SCSI channels, each capable of controlling up to seven devices. By using optional disk array technology, the PowerFrame can move over 12Mbps through the IIOP and provides complete media fault tolerance, including the ability to replace drives without shutting down the system. The system can be configured with up to 42Gb of internal storage and is Novell certified.

**For more information, contact Datamatic, (02) 449 8133; fax (02) 488 9450. Prices start around \$33,000.**

## Portable VGA cards

Ahead Inc. has re-packaged its Wizard VGA cards to fit into the half-slot of laptops and portables. The two-layer board uses Wizard's VGA 5000B chip which had built-in drivers for Windows 3.0 and is compatible with all multi- and dual-sync monitors. The Wizard 5 card supports 132 columns and 44 lines with a resolution up to 1024 x 768 in 256 colours (with an external monitor attached). The Wizard 70 version of the card sweeps at 70Hz for faster refresh.

**From \$437 Wizard 5 and Wizard 70 from \$400. Force Technology (02) 971 1000; fax (02) 981 1932.**

## Magneto-optical storage

Koseki have released what is claimed to be the world's fastest rewritable mass storage subsystem based on Canon's magneto-optical disk technology which offers both high speed and good read signals. The drive is both Macintosh and IBM-compatible. Koseki suggest that it can be used for additional memory for local area networks, for storing images used in DTP, electronic filing and recording and playing back music.

**Koseki Magneto-optical Disk Drive \$5600, \$345 Cartridge. Koseki Corp. (07) 229 0466; fax (07) 229 1952.**

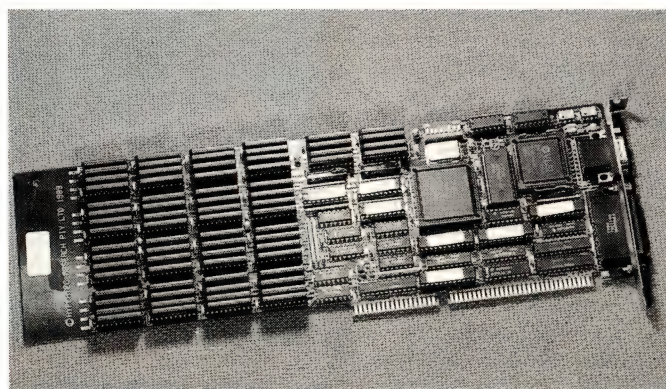
## 32Mb add-on

Hypertec has released a 32Mb add-on board that is compatible across the entire range of 'classic' PC architecture, from the basic PC to '486 systems. Configurations start at 512K and more memory added as required, up to 32Mb; memory can be set up as either extended or expanded, or a mixture of both. The Hyperam Classic fully supports EMS 4.0 in software and hardware. A multi-function version with one serial and one parallel port is also available.

**Hyperam Classic prices according to configuration. Hypertec (02) 816 1211.**

## CAD Motif

The new release of MicroStation has a completely re-designed user interface which complies with the OSF Motif standard, giving identical interfaces on the Unix, Mac and PC versions of the high-end CAD package, and is claimed to be 'about 100 per cent faster than it was before'. The speed of complex surface modelling has been increased by the incorporation of uniform rational B-spline geometry. Rendering capabilities have been enhanced and Pixar's Renderman is now supported. There is a new development language which allows users to customise the interface – it includes





# The Twinhead 590



*The Twinhead's reliability got a thorough testing! After I'd written this review, there was an electrical fire in a wall and the ceiling of an upstairs bedroom at my home. Extinguishing it and the immediate clean-up to ensure it didn't start again raised a lot of dust – everything in the house was covered with it and sooty particles. In the rush, I hadn't thought to cover the DSE machine and another I had downstairs for review. The enthusiasm of a helpful neighbour also saw that the two machines got 'damp'. As you can see, afterwards, the Twinhead fired up happily, while the other machine insists that it now has a non-Dos hard disk. Aside from the concrete drop test, that's about as rough as you can treat a PC. Well-done Twinhead!*

WHEN I HEARD that Dick Smith Electronics was handling a new range of PCs, I was quite interested to have a look – over the years that company has sold some of the best 'fun' machines around: remember the Vic-20, the Spectrum and the Super 80 kit computer? They introduced thousands of local users to games and writing tight code and left many of us with a hunger for more that is only today being satisfied. Now DSE has moved, like the rest of us, from 'fun machines' to 'productivity tools'.

It's not only the computers that have changed since those days in the mid-eighties – so have our expectations. We have moved beyond Space Invaders and programming our own software and utilities using Basic and 16K of RAM. Today, speed, lots of RAM to move around in, and 'standard' are conventional requirements. My first DSE machine – and it fit those specs – was an Acer Multitech AT. It's still giving good service after over two years of hard work – it was the first machine I installed Windows on and, all the curses connected with that aside, the computer couldn't be faulted.

For several months now I've been using the 386SX ver-

sion of DSE's new range, The Twinhead 590, with an Acer VGA colour monitor (that was it with Animator on our November cover) – and a satisfying beast it is. I even like the sound of the hard disk as it boots up: it gives a 'grunt' like it's ready to dig into the task at hand. The keyboard has such a good feel (the tactile feedback and bounce is just right for typing style), that I almost didn't mind that it is the standard extended (AT) version with the Function keys across the top.

I've commented before how I prefer the Function keys down the left side because, with the applications I use most often, I tend to use them as speed typing keys. No matter how I practice, I still have to take my eyes off the screen to hit the F-keys, and a Shift or Alt combination becomes a two-hand job.

Still, I can't blame DSE for that, only the standard that decreed we needed 12 Function keys. I might feel happier if I had seen more packages that could use F11 and 12. In any event, if you feel like me, an 'old-fashioned' keyboard can be had for around \$100. A plus for the Twinhead's keyboard is that the connector is the 'most standard' small plug and has 'Top' clearly marked on it. This mightn't sound important, but if you've tried to plug in as many unmarked (and can't-be-seen) keyboard connectors as I have, you can appreciate this attention to detail – which has also put the power switch on the front panel and included a recessed reset button.

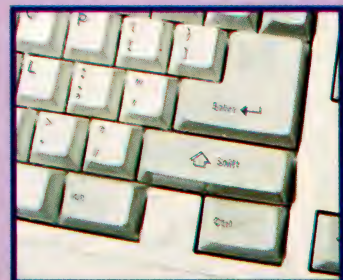
Sitting next to my MultiSync 3D at the office, the Acer monitor coupled with the standard Paradise VGA graphics adapter looked 'sharp' and I have no complaints in that department. The Paradise adapter has 256K of graphics memory standard, which gives 16 colours in VGA, but it can be expanded to 512K, giving 256 colours in Super-VGA. On the other hand, if you don't need colour, there is a monochrome VGA monitor for the system that takes \$500 off the price.

The front panel allows for two half-height and one full-height devices. Those who like some feedback from the hardware will appreciate the full set of power, hard disk access and keyboard lights.

In the time I used the Twinhead, I had everything on it from SimCity to Toolbook, with Word, 1-2-3 v2.2 and Advanced Revelation in between, all running under the supplied Dos 4.01, with nary a hardware hiccup. Speaking of hardware, the system has two serial ports (a 9- and a 25-pin), a parallel port and four free expansion slots; 1Mb of RAM is standard and there is room on the motherboard for 5Mb. The hard disk is a speedy 40Mb voice coil and the floppy drive, off the shelf, is a high-density 5.25. And – in case you've got a collection of old XT games in the cupboard to relax with, the CPU speed is switchable from the keyboard.

Sounds like just the shot for a small business? You're right – but at \$2995 it shouts!

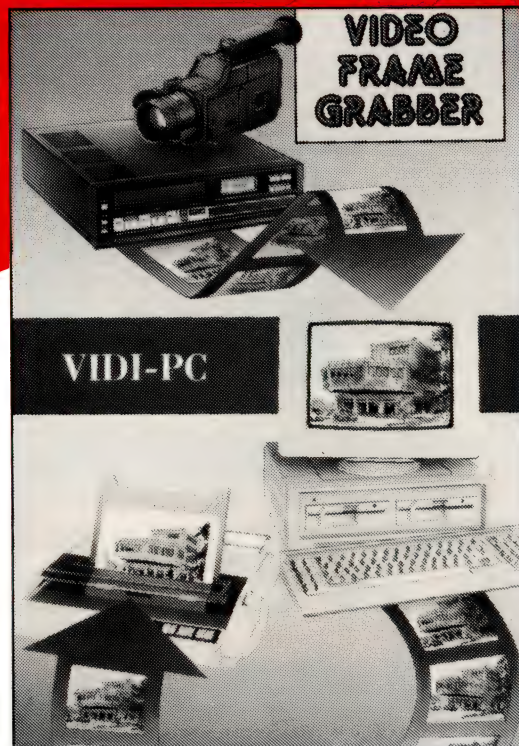
– Jake Kennedy





# How does this grab you?

## VIDI FRAME GRABBER



VIDI is the missing link in your graphics presentations. Using VIDI, a cable and your computer, you can capture video images from ANY source that outputs simple video signals. Cameras or videos, it doesn't matter, VIDI will grab a perfect image in 16 shades instantly! You don't have to pause your video, you don't even have to have a digital VCR. Multiple frames can be stored into memory for saving as an animation sequence, and the software allows full control of brightness and contrast to ensure top quality images. The uses for VIDI are virtually endless; Desktop Publishing, Desktop Video, graphics productions, program enhancements, animation; the limits are your imagination! To introduce VIDI PC into the Australian market, Pactronics are giving away, ABSOLUTELY FREE, VIDICHROME, the amazing software upgrade that allows you to digitise video in full colour!!

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## VIDI RGB COLOUR SPLITTER

If you have a colour video camera, the VIDI COLOUR SPLITTER is the ideal companion to VIDICHROME. The RGB COLOUR SPLITTER

totally eliminates the colour filters normally required to digitise in colour. It does this by taking in colour signal and then stripping it to the three colour bands, Red, Blue and Green. Using this, you can grab full colour frames faster than ever thought possible. Take a rock solid image into your camera or from your video, and seconds later, PRESTO!! V.G.A. images better than you'd thought possible.

## VIDI-CHROME

If you thought VIDI was good, wait for this! VIDICHROME allows you to digitise in FULL COLOUR! Using a series of coloured filters, VIDICHROME takes images, even from a black and white camera, and displays them in V.G.A. mode! It fully supports PAL displays, and can simultaneously display 256 colours on screens up to 800 X 600 size. For those of you with a colour camera, you may like to take advantage of the time saving offered by the RGB Colour Splitter.



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TASMANIA ESP Marketing, 52 Elphinstone Rd, Mr Stuart 7000 (002) 78 1606





a compiler and linker. Other new features include advanced dimensioning capabilities which cause dimensions to 'memorise' their relationship with point on the object so that when the object is changed, the dimensions are automatically adjusted.

**MicroStation 4.0 \$5700.** Intergraph Corp. (02) 888 9900.

## Video digitising

Lako Vision's colour video digitising package for PCs, Computer/Eyes Pro, enables full-colour images to be captured from any standard video source, including video cameras, camcorders and VCRs. The package comprises an interface board and software on a 5.24-inch disk, a manual and warranty.

**Computer/Eyes Pro \$950.** Lako Vision (03) 525 2788.

# 80386 C COMPILER

**HI-TECH Software** announces a C Compiler for the 80386 and 80486 processors. Now instead of running 16 bit programs in 640K on your 386 or 486 you can run 32 bit programs in the full memory of your machine. Our 386 C Compiler produces 'flat' model programs, using full 32 bit addressing in protected mode while still executing under DOS. Our library incorporates a full DOS extender that automatically handles switching from real to protected mode and back. You can also produce 8086 code when needed. You get full library source code, a macro assembler for the full range of 8086 family

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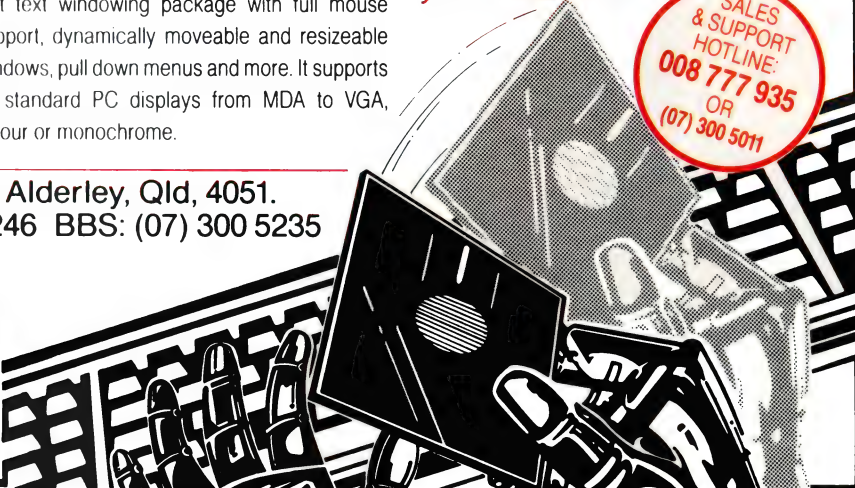
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## Mini UPS

Lumen International has released three UPSs in its new PC Might series. The PC Might 25, weighing less than 5kg, has a power rating of 250va and includes a maintenance free battery, overcurrent protection, over load and short circuit protection and line filtering. In the event of mains power loss, the unit sounds an alarm, giving about 6 minutes warning. The PC Might 35, rated at 350va, and the PC Might 55 (550va) also have those features and add a computer interface socket which will shutdown the computer system automatically.

**PC Might series from \$299. Lumen International (03) 792 4203; fax (03) 791 3719.**

## Multimedia with icons

Iconauthor is an icon-based development system for creating interactive, multimedia applications. The Visual Programming technology it uses is object oriented. The package is Windows 3.0 compatible and supports 256 colours. To incorporate photographic images into a multimedia presentation is simply a matter of plugging a video source into a video 'grab' card in the PC, digitising the image and then clicking on the Display icon in Iconauthor. There are two levels to the software: for \$2369, animated and touchvision images can be incorporated in the presentation; and \$3999 gives those capabilities, plus motion video and

sound.

Productive Professional Systems also distributes a range of other Windows products – Analytix: an automated mechanical engineering package; MetaDesign: a diagramming tool for designing complex system models; Finnesse/F: a 3D

structural analysis system; DesignView: a sketching tool and equation solver; and RezSolution: a utility for sizing graphics.

**IconAuthor 3.0 prices above. Productive Professional Systems (02) 387 2472; fax (02) 387 6420.**

## Octadial



MELBOURNE-BASED software development company, Solid Software, has developed a new computer game called Octadial. The game is a spin-off from other 'serious' development in the C++ object oriented language. (The author of Octadial wrote 'The C++ Language', an overview which appeared in our December issue.) The game is based on octagonal tiles, each of which starts with eight differently coloured bevelled faces (one of the Game Level options displays the tiles in a three-dimensional perspective – in which the term 'bevelled faces' makes thorough sense).

The player's goal is to shuffle the coloured faces between tiles, using overlapping 'dials', so that you end up with one completely yellow tile, one completely blue tile and so on – a mission reminiscent of that for Rubic's famous cube. To achieve that aim, the player can rotate individual tiles one-eighth of a turn per click, clockwise or anti-clockwise. Or can select one of the dials for rotation, either clockwise or anti-clockwise. As the dial goes around it takes with it 12 coloured faces from the 4 tiles it overlaps, that is, 3 faces from each tile.

Solving the first few tiles is relatively easy, the last 2 or 3 become very difficult, as each dial rotation begins undoing previous good work. Octadial runs on the IBM PC and compatibles, with VGA or EGA colour graphics.

**Octadial \$49. Solid Software (03) 754 4377.**





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## VDT worries

IN THE PAST few months studies reported in the press have highlighted the (possibly) bad effects of VDT radiation. Unfortunately most of the reports are so technical that the average user – and computer – dealer is left only with the impression that the emissions are 'bad', but can't be sure why and how they can be affected. Add to that the fact that monitors – VDTs – can emit four distinct types of radiation and particular products may shield against one or part of one, only adds to the confusion.

The emissions can be categorised as: visible light, X-rays, static electricity and electromagnetism. With few exceptions, X-ray emissions are not a problem today, since monitors are heavily shielded. The skin, respiratory and contact lens problems caused by static electricity are thoroughly understood and a number of low-cost solutions are available.

Most of the worry today is about electromagnetic radiation, which is generated in bringing the image to the screen – a magnetic field is used to guide the sweep of the electron beam that traces the image on the screen. Magnetic fields similar in nature to those created in monitors have been suspected of causing abnormal pregnancies and miscarriages, elevated cancer rates in children, face rashes and even male and female chromosomal damage. 'Suspected' is the key word here – the studies that have been done are inconclusive.

The much quoted 'Kaiser Report', funded by the California-based Kaiser Institute, for example found that women using VDTs for more than 20hr per week had almost twice the miscarriages of women who used monitors less; the children from this same group had about 40 per cent higher birth defects. While it makes sensational press, the study was done with too few subjects to be statistically valid. That's not to say there is no truth in the hypothesis – it's just not proven. Other studies on larger groups, suggest that the damage may be caused by higher levels of stress found in women using monitors.

Whatever the truth, it's interesting to note that IBM itself and other manufacturers have started to market 'radiation safe monitors'. Although, this seems to have been done more to settle the qualms employers were having about being sued by users for alleged health problems than because any of the companies believe in the danger.

Queensland company Radshield Australia distributes the American made NoRad Shield. These are probably the best of their type. The wire mesh that covers the screen differs from the usual anti-glare shields by having very fine, almost invisible wires and these wires are conductive to ground static. At a distance of about 30mm from the screen, studies have shown that there is no measurable radiation in the 20KHz. However, the shields do not offer protection against the extremely low radiation frequencies – these are the frequencies suspected of causing cancer. Radshield have a range of shields to suit most flat screen and curved monitors up to 19 inches.

For more information contact Radshield Australia, (008) 07 4446; fax (075) 98 1353. The company can forward reports of independent tests on the shields and evaluations on request.

– Jake Kennedy

## Trend-y charts

New export formats and charting features are among the enhancements included in the latest release of WordPerfect's DrawPerfect. Enhancements include the ability to hotlink spreadsheets and charts containing the same data – when the spreadsheet is changed, the chart is automatically updated. Users can now add a trend line to a chart, giving the ability to plot five different types of trend lines: linear, logarithmic, exponential, power and moving average; the trend line can also be used to extrapolate existing data. Two new export formats have been added: PCX and LL (Laser Graphics Language for Montage, Matric QCR and Xerox 6500). Other enhancements have been added to save key-

strokes; for example, font, colour or size of multiple lines and windows of text can be modified by highlighting it and choosing new options; and fields such as re-draw and Switch are now mouse selectable. Current users can upgrade by phoning (02) 415 5366.

**DrawPerfect 1.1 \$715.**  
**WordPerfect Pacific (02) 415 5222; fax (02) 418 7505.**

## CBT for project management

Clarke Curtis developed Project Management for Professionals, a disk-based training package, as a result of its own experience in project management. It provides training in planning, organising and controlling projects and includes an Information Pack to allow users to

## Storyboard Live!

IBM HAS ANNOUNCED Storyboard Live!, an extension of the Storyboard line of presentation products. The product allows users to create on-screen presentations that incorporate animation, motion video, music, voice, and computer graphics. Storyboard Live! ships with a Video Editor. This module allows the user to capture video sequences with a video capture board and any video input source, such as a VCR or a laser disk, and store the captured video sequence on a hard disk for use in presentations. Video sequences can be in black and white or in colour. The user can control the size of the video window, selecting from six predetermined window sizes. Additionally, computer draw, paint, or text graphics can be overlaid on top of the video. The Video Editor was formerly part of an add-on program from Krepec Publishing but is now fully integrated into Storyboard Live!

Also included in the package are 34 sprites, or canned animation routines, a Sprite Editor, which allows users to edit existing sprites, and a Sprite Generator, which lets users create their own animation routines. The sound capabilities of Storyboard Live! allows developers to create sound files. The developer must have the Soundblaster card to capture sounds, but the resulting presentation can be played back through the internal speaker of any standard personal computer. Storyboard Live! contains a module which allows a developer to distribute presentations for playback by individuals without the Storyboard Live! software and without any additional audio or video hardware.

**Storyboard Live! pricing hadn't been set at press time.**  
**For more information contact your IBM dealer.**

– Newsbytes



# How can Software only cost \$5?

## IT'S SHAREWARE!

Look at the ads! Any number will tell you that you can buy software for your IBM PC or compatible for only a few dollars. Well, you can't believe everything that you read. These \$5 (or \$4 or \$7 or \$10 or whatever) disks are only for you to evaluate the software - if you wish to use the software you must pay more to the author. This is SHAREWARE and it has revolutionised software distribution.

### How it works

Shareware relies upon the honesty of the users of software to pay for the software which they use. To continue using the \$5 (or whatever) disk is a breach of copyright in the same way as using a pirate copy of other software.

The great advantage of Shareware is that potential users are able to evaluate a product at little or no cost and then only purchase, or register, if they intend to continue using the product.

Registration varies from \$20 to \$200, and because the conventional marketing channels are bypassed this is exceptional value.

Shareware users are even encouraged to copy their software and give a copy to their friends so they too can decide if they would like to use the product, and of course then pay for it.

Word would spread slowly if the author solely relied upon users just sharing copies with their friends. User groups are encouraged to share the software with their members on a non profit basis. Many user groups set up Bulletin Boards so that members can "download" software which they would like to evaluate for use. This is another accepted way of distributing shareware. Some commercial operations also distribute shareware and charge for the disks. The more they can sell the more profit they make so they encourage you to buy the evaluation copies and sometimes "forget" to tell you that if you want to continue using the software that an additional payment is required.

It is fine for these commercial operations to distribute Shareware as long as their ads clearly state that the additional payment is required. Software for \$5 is just too good to be true!

### What is Public Domain Software?

Public Domain software is created by authors who chose not to seek formal rights or royalties. There is no restriction of any kind on distribution of this kind of software. Most public domain software is games or utilities. There are very few complete products in the public domain.

Shareware software on the other hand is distributed so the user can evaluate the software to decide whether he will register with the author and continue to use the software.

Shareware is an alternate method of marketing software, not really a different kind of software.

In fact the more successful Shareware products hold their own against their commercially distributed competitors. The greatest difference is that the Shareware product's packaging is not as fancy and the price is much lower.

### Where can I obtain Shareware trial disks?

A collection of disks is generally referred to as a Library. A Library may be kept by a user group, a bulletin board operator or by a commercial diskette distributor.

Some education establishments, companies and government departments have a library on a CD-ROM (a large capacity read only disk drive using compact disk technology) and allow students to make copies at no or at a very low cost.

And of course it is quite acceptable for your friends to give you copies of Shareware software that they may be using or have evaluated.

The only restriction is that if you decide to use the software then you should register so that the author is rewarded for his work.

### Do I need to join a Library?

Some commercial libraries and most user groups insist that you join before you can purchase disks. If you intend to purchase disks a properly prepared catalogue will make your selections

easier and repay your membership costs many times over.

Other libraries allow purchases without any membership fees and some offer a free catalogue. The free catalogue is usually a very short description of available disks and is often given away as an insert in magazines. Of course there is no such thing as a free lunch - the brief descriptions in free catalogues mean that you will invariably purchase more disks than you really need. The descriptions are so short you really are taking a lucky dip!

### What is PC-SIG?

PC-SIG is the world's most respected Shareware Library and contains well over 2000 disks. PC-SIG does NOT require you to become a member to purchase diskettes but is the leading publisher of information on Shareware. PC-SIG also makes its Library available on CD-ROM for companies, educational bodies and government departments.

Every two months SHAREWARE magazine is available in newsagents at around \$6.50 a copy. The magazine describes new additions to the PC-SIG Library, has comparisons and reviews of available products as well as regular columns. The magazine is also available on a subscription basis at \$20 per annum, a saving of \$19.

"The Encyclopedia of Shareware" is a two volume catalogue with detailed descriptions of the disks in the PC-SIG Library. To make finding the disks you require as easy as possible the disks are grouped by category with extensive indexing. The two volume set is available at selected bookstores and computer shops at \$39.95. If you choose to subscribe to SHAREWARE magazine for just \$20 you can purchase the ENCYCLOPEDIA for only \$29.95, a further saving of \$10, and the post and packing is FREE.

For a total of only \$49.95 you will not only have the best reference work available but you'll be kept up to date for a full twelve months. As a further bonus we offer special discounts to subscribers BUT you do NOT need to be a subscriber to purchase disks. There is no minimum purchase. Our regular prices for trial disks are - single disks \$13, any five disks \$50 and then additional disks in that order for just \$5. Remember though it is easier to select the disks you would like if you have the two volume Encyclopedia and the magazine.

### Can Software be Registered in Australia?

PC-SIG's distributor in Australia, Manacom offers the full PC-SIG Library and also has arrangements with many authors to represent them in Australia. Yes, the complete registered copies of the best available Shareware products with manuals, telephone support and access to upgrades right here in Australia.

### How Good is Shareware?

Registered shareware is used by government departments, corporations and individuals right across the country. There is a full range of products from educational games, to databases, spreadsheets, wordprocessors, accounting systems, and specialised applications. One of the products we distribute was selected against all comers as the best value communications product by the readers of PC-World magazine.

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## PRODUCT UPDATES

print examples of formats and layouts of typical project management documentation. The package is aimed at managers 'who are looking for individual training at their own pace' and those who have purchased a

PC-based project management package and want to use it to its full potential.

**Project Management for Professionals \$295. Clarke Curtis Consulting (03) 510 1486.**

### HP cuts prices

HEWLETT-PACKARD has cut prices in its Vectra range sold in Australia. The cuts are as much as 25 per cent for PCs and as much as 80 per cent for memory. In addition, HP has increased the level of its base machines, now shipping machines with a base of 4Mb of RAM, instead of 1Mb.

The top-of-the-line '486 model 3 with a 330Mb hard disk will now cost \$21,262, down from \$26,195. The base model '286 machine is now \$3913, down from \$4400. HP's PC product manager, Graham Thomas, told Newsbytes that these prices more than favourably compare with the competition, with similar IBM and Compaq '286 PCs costing around \$4700 and \$5200 respectively.

Thomas claimed that the cost cuts were due to improved manufacturing and delivery techniques. He said that HP intended to be more competitive in 1991, taking more market share from the other top-line PC manufacturers.

— Newsbytes

### Encryption alternative

Data security product manufacturer, Eracom, has announced

a PC device to safeguard data files. PACS (Primary Access Control System) is a hardware/software combination for PCs with a hard disk running Dos 3.0 or higher. The system blocks booting unless a correct



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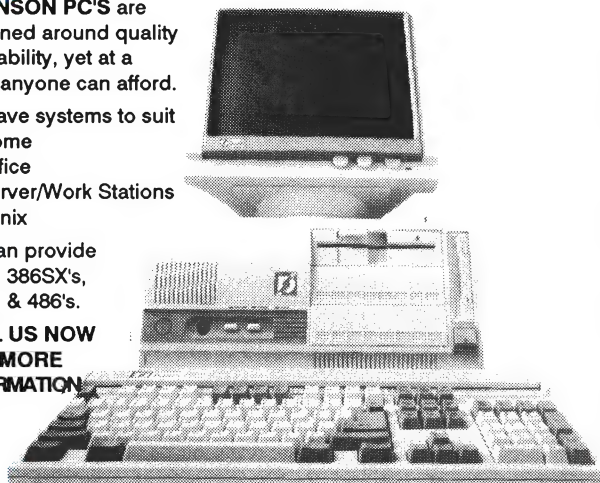
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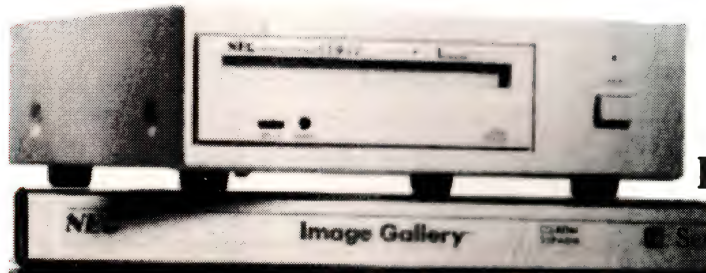
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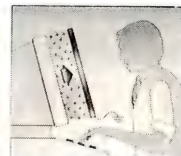
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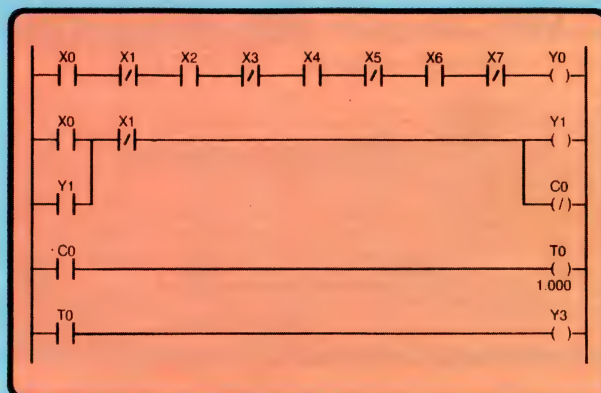
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## Logic for PCs

LOCAL DEVELOPER Procon Technology has released an upgrade to its Programmable Logic Control (PLC) program for IBM-compatibles. Version 2.5 provides an enhanced relay ladder that (in conjunction with the separate PC-IO-XX input/output board) that now supports 8 external inputs, 8 outputs, 64 internal control relays, 8 timers (0.1 seconds to 24 hours) and 8 down counters (pre-set up to 99,999). Programs now run four to five times faster and scan rates can be varied up to 300 times per second (4ms per scan). PLC programs can be run in the background, using only 2 to 8K of Ram. Forced inputs and outputs are now supported, enhancing the debugging capabilities of the editor. The PC-IO-XX interface software has also been upgraded; version 2.2 now supports Microsoft's Professional Development System Basic version 7 in addition to QuickBasic, TurboBasic (now PowerBasic), QuickC, TurboC and TurboPascal. The new version also provides documentation and support for the Fishertechnik range of experimental models and robots. Procon Technology is a member of the



Australian Software Publishers Association.

PLC version 2.5 \$250; upgrade \$100. PC-IO-XX software version 2.2 \$50; free upgrade. Procon Technology (03) 807 5660; fax (03) 562 0503.

user ID and password are entered – up to 15 users are supported per system. If the PACS card or software are removed, the computer still won't boot. Since writes to the boot sector can be disabled and use of floppy disk drives can be controlled, there is also a certain degree of protection against viruses. Extensive on-screen help is available to guide the system supervisor through installation and setting access

parameters.

**Primary Access Control System \$150. Eracom (075) 93 4911; fax (075) 93 4388.**

## Faster Hardcards

Plus Development Corporation has released a new generation of personal disk-drives-on-a-card that support data transfers in excess of 1.4Mb per second, which is almost eight

times faster than the 180K per second that existing '286 and '386 disk drives normally support. Available in 52 and 105Mb sizes, the Hardcard II XL is less than 2.5cm thick, fits into a single PC slot and is easily installed – in minutes, the company claims. Announcing the development in drive technology, Jeff Heimbuck, president of Plus development, said: 'We will be the price/performance leader in the per-

sonal disk drive market. To do this, we will continue to break technological and pricing barriers for disk drives.'

**Hardcard II XL Model 50 \$1108; Model 105 \$1844. Tech Pacific (02) 697 8666.**

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# VIRUS ALERT

## COMBATING THE COMPUTER HACKERS

In the last two months over 16 new viruses have been identified and are spreading through computer systems world wide.

The most distressing factor is the obvious aspect that computer hackers are finding employment infiltrating computer data bases, and creating programmes that over a period of time corrupt the data, slowly crashing the system.

Very little can be done to prevent a hacker from entering your system via a 'back door', particularly when the operator employs the use of a modem. Security locks may be placed on access to certain areas of data, but bear in mind that an employed saboteur often has an inside contact. Problems also arise when the saboteur is a member of company staff, someone you trust with access codes to data, and always the person you'd least expect to want to do your business harm. This has occurred in two Sydney businesses recently.

Major concern lies not only in the incidence of new viruses, but further that viruses are so easily accidentally transferred from one system to another. Someone contacts you via modem and unknowingly imports the virus, while the ambitious employee takes a disk home to complete the assignment in his/her own time and loads it onto the home computer. Once a virus has infiltrated your network or personal computer everyone is at risk.

Two viruses that are rapidly spreading are the KeyPress virus of the U.S.A. and the Monxia virus of Hungary.

Keypress, first isolated in late October, 1990; a memory resident .Com and .Exe infector, is rapidly spreading throughout the U.S.A., Australia, Asia and Europe.

Upon activation the virus causes infected programmes to have a direct date and time change to the date and time the system was infected by the virus. The virus activates after only thirty minutes of system time. Infection results in failure of keyboard input, repeating letter strokes and a manipulation of data.

The Monxia virus, a memory resident direct action infector of .Com files including Command.com, was first isolated as late as November 1990. Due to the youth of this virus, limited information is available as to the damage it may do, suffice to say that John McAfee – the world leader in isolating and eliminating viruses – has found this virus to be one of his most interesting challenges.

The Monxia Virus activates on the 13th day of any month. However the level of infection is determined solely by the time ratio of activation. That is, depending on  $n/100ths$  of a second at the time of activation, the virus may cause anything from a warm reboot, to data corruption, to deactivation.

Both viruses can be identified and eliminated with ViruScan and ProScan, however, initial infection can and will be avoided if care is taken with the importing and exporting of data to and from one system to another.

It is important that system operators and managers realise the danger of virus infection. Computer hackers are unscrupulous and viruses spread rapidly and easily, especially if your unsuspecting system presents the perfect environment.

For more information on computer viruses, their identification and removal, contact: Computerware for Micros, Phone (08) 362 8200; Fax (08) 363 1974; B.B.S. (08) 362 4293.

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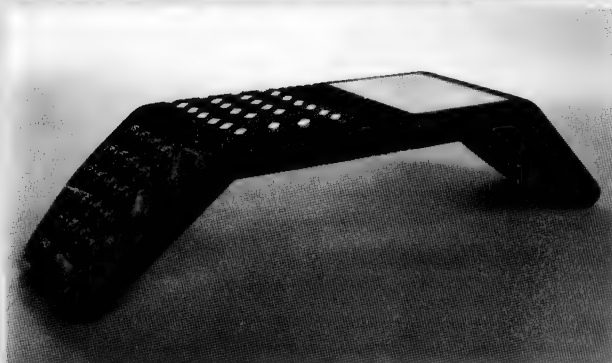
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## Lap keyboard



TECHNOLOGY HAS seen the office change over the years. It has moved from pens and pencils to typewriters to computers. But, basically, the office is still a place where people sit at desks, tapping away. Designing for a truly novel office environment, Michael Cuffe has come up with a solution which frees wasted office space, as well as providing a more comfortable and healthy way to work. Working towards his Master of Industrial Design at the University of New South Wales, Cuffe has designed an ergonomic keyboard which curves around the user's lap.

'Computer keyboards in use at present have evolved out of the typewriter of the last century and still conform to that basic layout,' says John Redmond, Head of the School of Industrial Design at UNSW. 'Not always the most comfortable things to use, we have tried to adapt our furniture around the keyboard and computer, rather than adapt the keyboard itself. A whole industry of ergonomic furniture has developed in Australia, dedicated to serving the need to match inappropriately designed computers with the people who use them.'

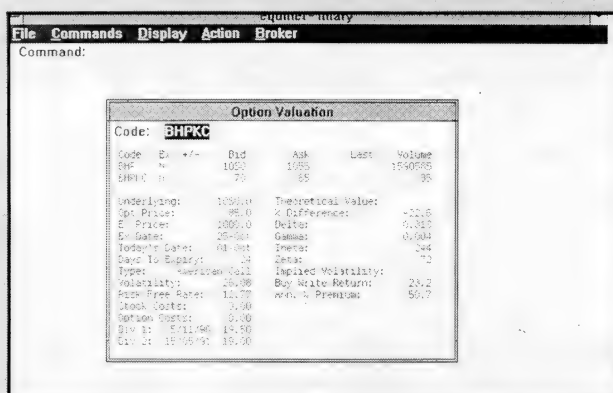
Research shows that the ideal position for the keyboard is the thigh zone and the best placement of the keyboard is, therefore, the lap. With expansion bellows in the centre of the keyboards, like an accordion, the board can be pushed in or pulled out to fit the user's lap comfortably. By incorporating an infrared transmitter in his keyboard design, Cuffe has eliminated the restrictions of cabling, freeing the operator to move about the office and vary the use of the available space.

**For more information contact the Liaison Office, University of New South Wales, (02) 697 2864; fax (02) 313 7128.**

## Equinet for Windows

A WINDOWS 3 version of Equinet, a locally developed share-surveillance software package, has been released to take full advantage of the features found in Windows 3. Developed by Equinet, the software allows brokers and funds managers to access live share prices, obtain company research from Australian brokers, create graphs from an extensive historical database, or trade options.

Hillary Hodgetts, Equinet's national sales and marketing manager, claims that the software performs much better than foreign competitors as it was developed for the Australian market by Australians with long term experience in the finance industry. 'The Australian Options market is very different to its overseas counterparts and we incorporated an enormous amount of user input to ensure our options module was tailored to the market,' said Hodgetts.



The Windows 3 version was developed over the last 12 months and incorporates features to allow the easiest use by end users, including multiple open windows and DDE (Dynamic Data Exchange) links to Windows spreadsheets like Excel and Wingz, the company says. According to Daniel Petre, the managing director of Microsoft Australia, 'Equinet is as sophisticated as any Windows product developed anywhere in the world and the fact that it is Australian is representative of the level of skill and software expertise that exists in this country.'

**The pricing of Equinet depends upon final configuration - for more information contact the company on (03) 612 5888.**

- Newsbytes

32-bit configurations. The card can handle encoding and decoding composite video, S-video and RGB, and has gen-locking built-in. Other features include linear keying, blending and mixing, digital chroma keying, VGA overlay and pass-through in various mixes of spatial and colour resolutions in both interlaced and non-interlaced modes.

**Targa+ Graphics Card under \$5000. Vision Control (03) 696 6044; fax (03) 696 6210.**

## Low-cost, high-end graphics

The #9GX graphics board for PCs handles both bit-mapped

and vector graphics in VGA, CGA, EGA and MDA emulations. It supports up to five levels of memory configurations and resolutions up to 1280 x 1924 in 256 colours. For vector graphics, the #9GX uses the TI34010 graphics co-processor running at up to 60 MHz. It is claimed to be up to 25 times faster at redrawing, panning, scrolling and zooming

than most other available boards. For bit-mapped graphics, there is an intelligent frame buffer architecture that allows, graphic information to pass directly to the screen, by-passing the co-processor - this enables bit-mapped images to be displayed almost instantaneously.

**#9 Graphics Xccelerator from \$1600. TCG (02) 699 8300; fax (02) 699 1339.**

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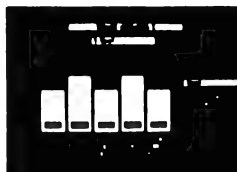
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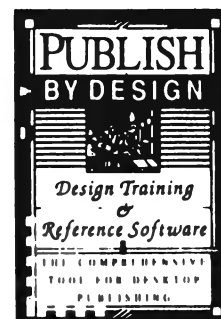
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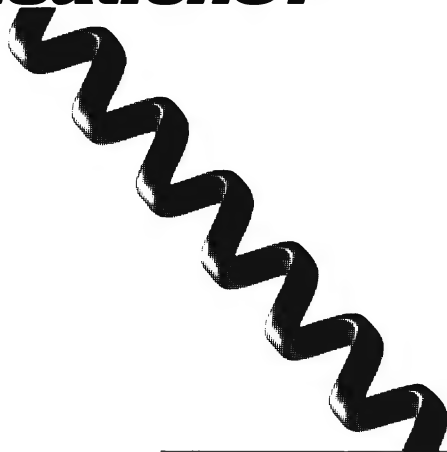
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## How to Buy a Home Computer

DAVID MILLER'S excellent book *How to Buy a Home Computer* is ideal both as a reference, or as an inexpensive birthday present. Obtainable from the Perth-based author, this indexed book is packed with useful information drawn from his wide experience as a computer consultant to government, business and individuals.

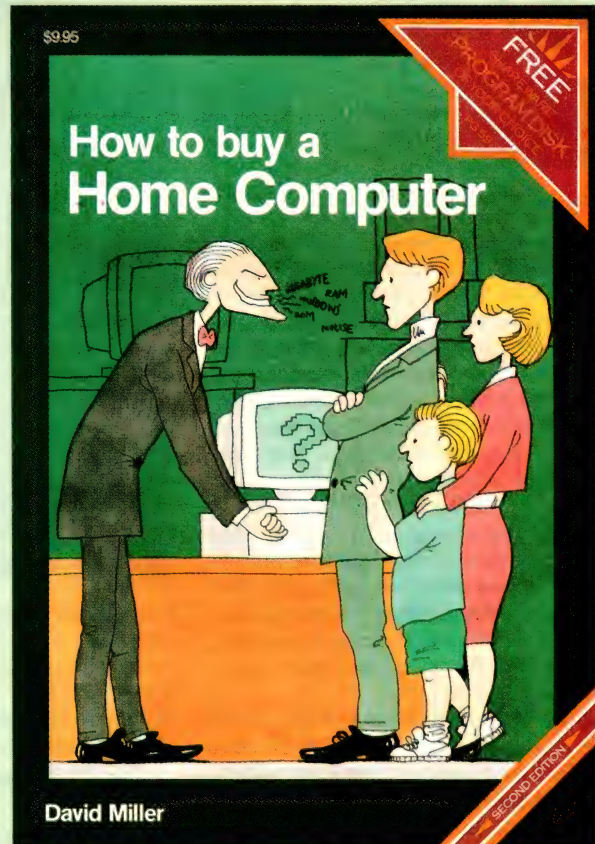
The variety of computers, software and their uses are bewildering, but this book successfully clarifies the issues to help you make an informed decision. Before you buy a home computer you need to decide why you want one, and what you intend doing with it. Quite rightly Miller makes this the starting point of the book which, he states, is intended to help the reader through three steps.

Step one is to decide what applications you'll be using. The second step is to select hardware to run the software as cheaply and effectively as possible. And, the final (often overlooked) step is to plan to invest time and energy in setting up the system and becoming familiar with it. Notice how decisions about software come first – too many buyers do it the other way round. They end up with a hardware system that they eventually discover does not run the sorts of programs they need to run.

Chapter two is a broad brush, thorough discussion of what you can do with a computer. Here the twelve major areas include education, games, word processing, databases, business use, graphics, investment and programming. Add to these bulletin boards, manager's tools, text retrieval and spreadsheets. And – if after reading all those sections, you still haven't made up your mind if you need a computer, you quite likely don't. However, assuming you know what you want to do with it, and why you want one, there are several key issues to be addressed before you hand over the credit card.

Apart from the pros and cons of various operating systems and whether or not to go for IBM compatibility, you need to look carefully at the software. Miller discusses in detail documentation, on-line help, user interface, copy protection, and utilities. He leaves the reader in little doubt that to buy a machine without service and support is a risky venture. You can choose to buy from a box mover who operates on the slimmest of margins but doesn't want to know you when things go wrong. Or, you can buy from a dealer who offers added value as service and backup when you need it. The importance of proper training for a new user is reflected in Miller's discussion of eight types and sources of training. Few inexperienced users would be aware of certain accommodation problems associated with computers. These include space, noise, power, wires and plugs, voltage, temperature, dust, smoke, interference and telephones.

What of the hardware? Chapter IV is essential reading if you want to understand the types of computers available and their operating systems. Here's where you learn of the arcane mysteries of processors and RAM, caches and speed, bus and memory. Learn also about disks, interleaves, lasers and interfaces. Buying a screen is not simple and straight



forward, nor is buying a printer, keyboard, mouse or modem.

How much should you spend? Which brand should you buy? Where are the best buys for software and hardware? The bad news is that these are vital questions asked by every confused home computer buyer and for which there are rarely definitive answers. The good news is that Mr Miller addresses these questions in the rest of his book, and provides some answers. He even covers the importance of regular backups – 'If you love pain, skip this section and move onto the next' – and touches on the nature and prevention of viruses.

A small but useful glossary completes the book, which covers every important area. Written in an authoritative but very easy-to-read style with attractive layout and amusing cartoons from Julian Chan, this 60pp, magazine-style soft-cover is highly recommended for anyone contemplating buying a home computer.

**How to Buy a Home Computer, \$9.95, is available directly from the author: David Miller, PO Box 598, Nedlands 6009 WA.**

– Max Pinner

### New scenarios

Maxis has released three new scenarios for its award-win-

ning, best-selling town planning simulation game, *SimCity*. The graphics package has Ancient Asia, where the player is shogun over a thousand cities;

Wild West which offers a frontier town; and Medieval Times, a feudal castle. Maxis is planning a series of further graphics additions. *SimCity* is available

for IBM-compatibles, Amigas and Macintoshes.

***SimCity Graphics* \$59.95. Dataflow (02) 331 6153; fax (02) 331 3665.** □





JOHN  
HEPWORTH

# Making programs modular

THE IBM PC AND its kin have been with us for almost a decade. Originally the programs were very simple and unambitious. Often features that we now take for granted were a separate program that linked poorly to the main program. Word processors had little format control, and a built-in spell checker was rare. The famous WordStar originally needed add-ons for spell-checking and mail-merge. Marketing pressures have meant that many lean and fast programs have become slow, obese 'one size fits all' monsters. Users and commentators alike have suggested a way out; make programs modular so that users can buy just the functions that they need, and glue them together as required.

The concept is good, but the execution in the character based Dos environment was difficult to the point that it never happened. Windows, however, comes with the 'glue' that makes it easy. Not only does Windows take care of handling the various output devices like monitors, various video standards and printers, it also has Dynamic Data Exchange (DDE) to link data live between various applications.

### DDE

WHAT CAN YOU do with DDE? Link data in spreadsheets and word processors dynamically, so that changing data in one (say the spreadsheet) causes the other (say a table in a document) to be updated. The result? Change a number in Excel. The information is recalculated and charted in the spreadsheet, and the table and graphics in the document are updated, all automatically! No longer must you buy an 'integrated' software package, with spreadsheet, database and word-processor, communications and more, and then only use some of the modules.

The procedure for using DDE is simple. Using Word For Windows (W4W in my shorthand) and Excel as the two example applications, it takes very few steps. Launch Excel and W4W, and have them running at the same time. Now create a small spreadsheet in Excel. I used one with three rows and three columns of data, plus labels at the top and left and

totals or averages at the right and bottom.

Use mouse or cursor keys to stretch a highlight over the table. Choose Edit Copy in Excel, then go to W4W. Put the cursor where the data is to be inserted and choose Edit Paste Link. *Voila!* A table appears in W4W, with the data from the selected and copied area of the spreadsheet. This table can then be formatted using all the W4W techniques, including type faces, cell widths, borders and rules. Inserting an Excel chart into W4W is just as fast. Create the chart in Excel, a task that takes just a moment or two. Select the chart and use Edit Copy to copy it to the clipboard. Go into your W4W document and use Edit Paste Link to insert the chart. Once in W4W the charts or spreadsheets can be moved, resized, formatted or (in the case of charts and other pictures) cropped.

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*The first and most obvious benefit of Windows and DDE is that it is dynamic.*

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So what, I hear from the gallery, I can import a Lotus spreadsheet into my favourite Word Cruncher 10 word processor. But in most cases, importing a spreadsheet into a word processor means creating a spreadsheet file and then quitting the spreadsheet program, loading the word-processor, importing the data and then formatting it. Updating the information forces you to quit the word processor, start the spreadsheet software, modify the data, save it to disk, retrace the path to the word processor, and re-import the data.

The first and most obvious benefit of Windows and DDE is that it is dynamic. Both applications can be running at the same time with the user going from one to the other with a couple of mouse clicks. Secondly it is automatic. Update the spreadsheet, and within moments the document is updated. It's a very different

story with old-fashioned Dos applications. How often have you updated a spreadsheet, and forgotten to update the equivalent data in the document?

DDE is not limited to simply linking Word for Windows and Excel, there are a host of other applications that use and support DDE. I can recall seeing a demonstration of an early version of the Windows communications software, Talking Windows. It was accessing one of those electronic banking services via a modem. As the data came down the line, DDE was used to update an Excel spreadsheet live and on-line. As time goes by there will be many, many more such applications.

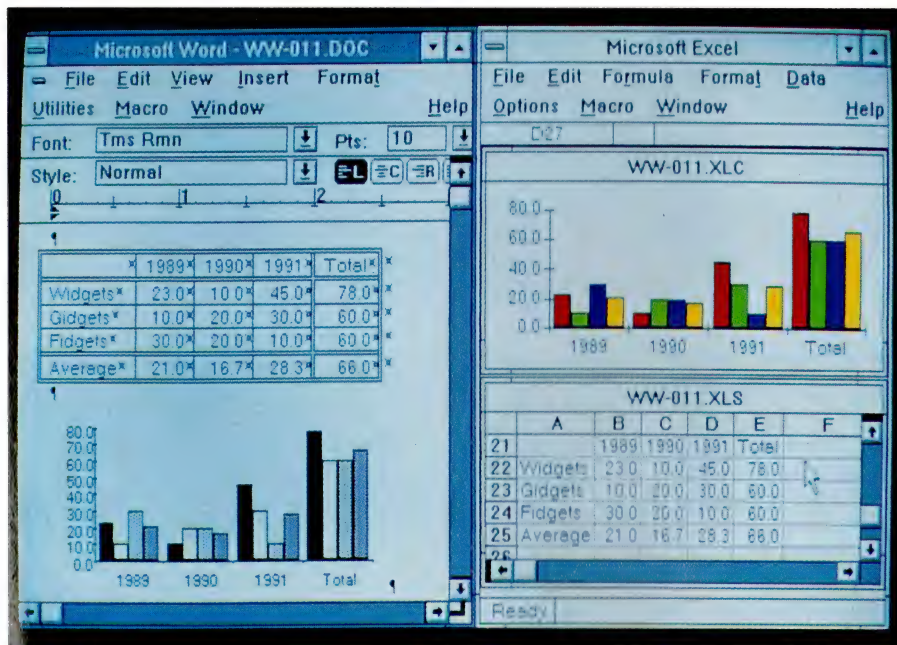
### Q+E

EXCEL HAS ALWAYS had excellent data import and export facilities. It could read text or database files, load them into the spreadsheet virtually automatically, and when the user went to save the files, would save them back into the original text or database format. Unfortunately, manipulating database files in a typical spreadsheet tends to be a bit of a kludge at best.

To the rescue comes Q+E. This is a program that is enormously useful by itself, or which can be linked via DDE to Excel and dramatically enhances the data handling capabilities of Excel. It makes it easy for Excel to access and query external database files. Q+E can be run by itself; alternatively, during installation, your system can be set up so that every time Excel is loaded, Q+E is available via one of the Excel menus.

Q+E's power starts with accessing and querying single data files, which can be in various formats, including dBase, SQL-Server and text files. The default display is all records in their physical order in the data file, shown as one line per record and one column for each field. A forms view is also available, with only one record on the screen at a time and with more fields visible than could fit across a single screen.

The display can be sorted on one or more fields by clicking on a value on the column containing the first key, and se-



Dynamic Data Exchange is the glue between Windows applications like Word for Windows and Excel.

lecting the sort order. The second and subsequent keys are selected the same way. Likewise selected records can be displayed, with simple criteria on the value in one field, such as equal to, greater than, less than, equal to or greater than, and so on. Criteria in more than one field can be used, so that only details for a person whose name starts with a certain letter and who was hired before a certain date will be displayed. The ease and power of these queries are fantastic.

The next step comes with the linking of

multiple databases. One-to-one and one-to-many relationships are supported, with Join and Outer Join both available. Queries can be saved to disk, and macros included in an Excel worksheet. Between them, it is possible to create an automatic way to start an Excel spreadsheet, which, via O+E, accesses one or more dBase-format database files or SQL-Server databases, selects records and fields within those records, sorts them by one or more fields, and finally inserts the results in the spreadsheet.

Often one of the unpleasant parts of looking at software is wading through a manual, and in the worst cases this can be a nightmare with missing information, bad organisation and bad layout. Not so with Q+E, which has an excellent manual showing just how to fully exploit it, and complete with a technical section for those who want to extend the use of DDE beyond the novice user level.

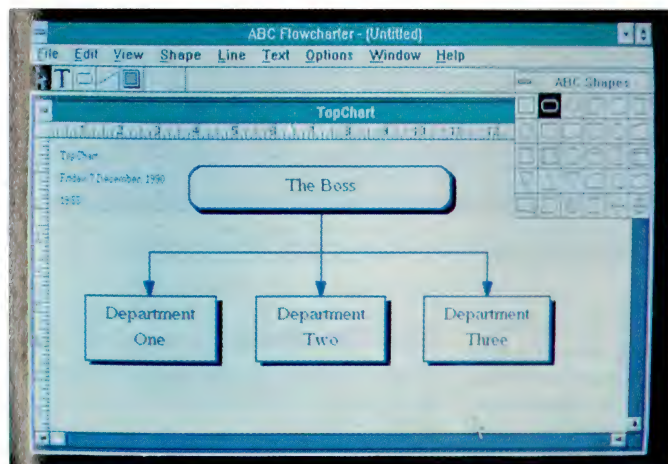
With the aid of DDE, Q+E is the glue that links Excel, Word for Windows and many other programs to the vast amount of data that most users and organisations hold in files with dBASE formats, or on SQL Server databases. Once I tasted Q+E, I couldn't imagine doing without it!

Q+E version 2.5 is distributed by Software Suppliers (02) 888 1955. Price is \$220.

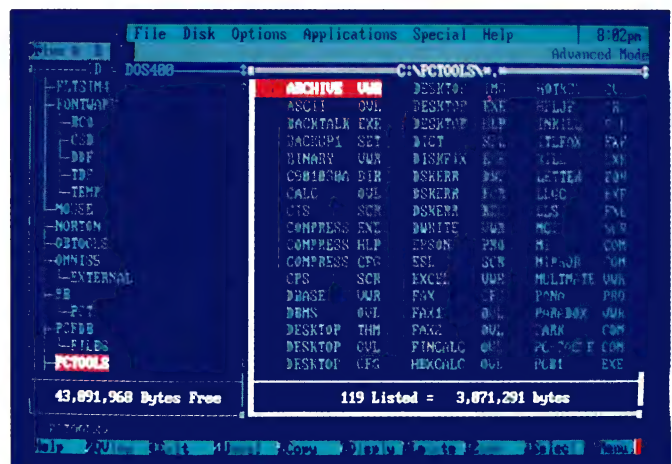
## Windows applications

WINDOWS IS REALLY taking off! There is a veritable explosion of applications of all types of software. There are commercial and shareware applications that appear for the first time for Windows 3.0. Lots of old applications written for Windows 2.x have been converted for Windows 3.0, while there are new and enhanced versions of old stand-bys.

The trinity of common applications encompasses spreadsheets, databases and word processors. These three categories are now established in the Windows arena. Windows word processors include Microsoft's Word for Windows and Samna's Ami Pro. Windows Spreadsheets start with Excel, with Lotus 1-2-3 release 3.1 as a fallback, though it does have limitations and does not support advanced Windows features like DDE. Superbase 4



ABC Flowcharter can easily create organisation charts and flow charts. Note the palette of shapes at the top right of the screen.



The PC Tools Dos shell has a screen with a directory tree and a list of details.



and Omnis 5 are powerful relational databases.

After the basic trinity came the specialist software and utilities. One of these specialist areas is Desktop Publishing (DTP) software.

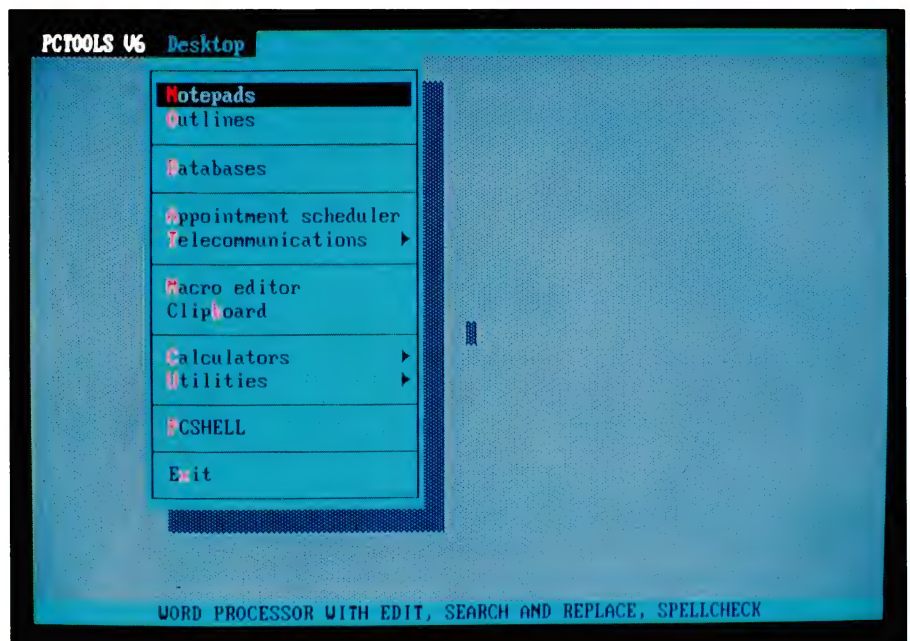
## DTP for Windows

SLUGGING IT OUT for leadership of the Windows DTP market are Ventura and PageMaker. Ventura Publisher was originally released for the GEM environment, but now there is a version for Windows 3.0 as well as GEM. It is a welcome improvement, making it possible to go from it to other Windows products and back again without having to quit one and relaunch the other.

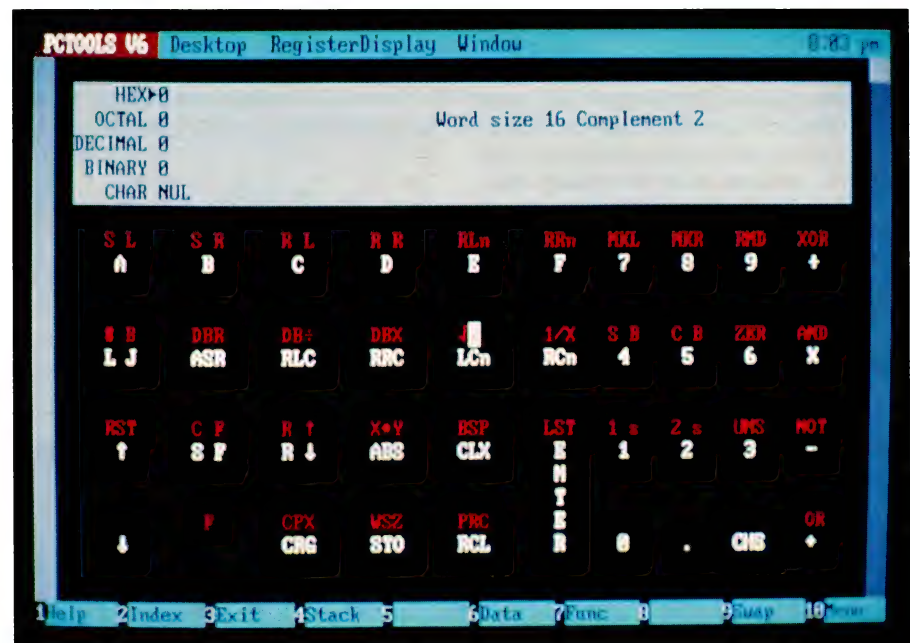
But what about PageMaker, the other leading DTP package for PCs? It has always been available for Mac and Windows, and more recently for OS/2. In its Windows version, PageMaker has had three revisions, and as you read this, PageMaker 4 for Windows will have been released. I have had a quick look at a beta copy, and came away much impressed, though in the copy I used, a few features were still inactive though they appeared on the menus. As soon as I can get a fully-functional release copy, and not just a beta, I'll make a full comparison of it and Ventura for Windows. In the meantime, there are some welcome improvements in PageMaker 4, while still retaining the basic philosophy of a pasteboard on which various text and graphics elements are assembled.

Aldus now uses a common folder for various files, which can then be accessed from PageMaker 4 and by other Aldus software. These include the filters for file import, breaking the former limit of 10 that could be available at a time. It also makes it easy to share dictionaries, and there are around a dozen dictionaries available as add-ons, including legal, medical and a range of languages.

Text can be rotated in 90 degree increments with any printer, and colour TIFF files can be imported. All sorts of typographic tricks are available, including forced justification, allowing spaces or characters within a word to be stretched to get just the spacing and effect desired. This is also aided by the ability to kern a selected range of text. PageMaker 3 supported various ways of defining colours, but now the Pantone method of defining colour is supported, making it much easier to be sure of the exact tone that will result.



The PC Tools Desktop has a vast array of useful accessory programs.



PC Tools Desktop has four calculators, including one especially for programmers.

PageMaker 4 has around 75 improvements or new features, while retaining the principles and most of the functions of the interface of PageMaker 3. It's a powerful product, pleasant to use, and will be sure to retain its place as a leading DTP package for the PC.

PageMaker 4 is distributed by InfoMagic, (02) 975 1044.

## ABC Flowcharter

HANDS UP ALL programmers. Hands up all who work in a medium to large organisation. Wow, there's a lot of you. Now, ask yourselves, what sorts of things are hard for you to do with your PC. I'm sure that one thing you hate to do is create organisation charts and flow charts. Draw them

up with a sketching package, CAD or DTP software, and just as they are finished the boss wants a change. After all, as a program is developed there will be many subtle amendments to the flow chart, and in any company or department people, positions and functions will change, be added or deleted.

ABC Flowcharter is the answer. It comes with all the standard shapes needed for flow charts and organisation charts, around thirty in all, ranging from plain rectangles, through rectangles with rounded corners, circles and ellipses, to decision diamonds and all the rest. Its easy to draw lines and arrows connecting the various shapes, and there is excellent control of line widths, and arrowhead styles. Shapes even have optional shadows!

Line orientation can be out-and-down, down-and-out, organisation chart and manual. Both out-and-down and down-and-out form dogleg connections, all parts of which are either vertical or horizontal, and try to start in the first case at the side of a shape, and in the other case at the bottom of a shape. Organisation chart gives lines with the familiar layout of a line coming from one box at the top of the chart, and fanning out like the roots of a tree to several other boxes.

So what, I hear. I can draw this sort of thing with all sorts of other products. I might even do it with pen and ink. The strength of ABC Flowcharter is its ability to modify the content and layout of a chart. Point to a shape and drag it to a new location. Resize it with the mouse. Either way the lines that join the shape to other shapes are automatically redrawn. Want to insert text into a shape? Point to the shape with the mouse and type the text. In addition text can be added anywhere on the chart in a text element without an outline that in all other ways acts like a shape.

Charts can extend over many pages, and a shape can be linked to another chart. In this case it is possible to have a simple chart with an overall view, and click on a shape to expand it and see the detailed chart for a department or subroutine.

I see a lot of software. Most of it, even very good software, is only temporarily on my system. From time to time there is a package that is either so much better than my competitors, or is so unusual, that it takes up permanent residence. ABC Flowcharter is one of those programs that is on my system for ever!

ABC Flowcharter is distributed by Software Suppliers, (02) 888 1955. RRP is \$399.

## Those %\$#@! icons

WINDOWS 3.0 USES icons in its Program Manager to represent each program. These are arranged in groups, each group having its own small window. Any group may be minimised to an icon, or can be

themselves into another order.

When the Save Changes option is selected while exiting the Program Manager, the layout of the open group windows is saved, but the layout of the closed group icons are not. These icons are automatically reorganised at the bottom of the Program Manager the next time Windows is run. It is not possible to save their screen positions, but you can save the order in which they appear on the screen.

The problem comes from Windows displaying closed group icons in a LIFO (Last In First Out) stack, in the PROGMAN.INI file. The icon that was the last to be minimised is at the left of the screen, the second last follows it, and the first is at the right of the screen. It is possible to manually edit the PROGMAN.INI file, but this must be done very carefully. It's better to follow a few simple steps while staying in the Program Manager. Do them in the order specified below, and don't leave any out.

In this example I will use the groups: Main, Accessories, Games, Win Apps and Dos Apps. The Main and Accessories groups are to be open, but not maximised. The other three groups are to be closed icons. The order in which we want the closed icons displayed is Games, Win Apps, and finally Dos Apps, from left to right.

1. Switch to Program Manager.
2. Expand all group icons to a window (do not maximise them).
3. Select the group window that you want to appear on the far right: 'Dos Apps'.
4. Minimise this window to a group icon.
5. Repeat steps 3-4 for the rest of the groups you want to arrange, first 'Win Apps', then 'Games'... On screen, at this point, the order of the group icons should be the reverse of what you want.
6. Exit Windows and select Save Changes.
7. Run Windows.

The group icons will now be in the proper order. Disable Save Changes the next time you exit Windows if you want to avoid any further screen changes in Program Manager.

## Microsoft packs

FINALLY, KEEP your eyes out for the entertainment pack and productivity pack from Microsoft. Each of these comes with several programs. The entertainment pack having a number of games, mainly intellectual rather than arcade games, while the productivity pack has various utilities. Full details will be available soon. The entertainment pack should be released first and cost around \$60. □

## By-line

THE MOST TREASURED part of an article for most journalists is the by-line. You know, that line under the title that says 'by Fred Nerk'. Programmers are just as egotistical, and there have been many and varied ways that they have engraved their identities within a program, even when the boss tried to keep them anonymous. The teams that created Windows 3 and Word for Windows are no exceptions. A few, rather unexpected, keystrokes will show the parents of both these products in the form of their electronic mail names, complete with billg for Bill Gates, the head of Microsoft, as the 'dad' of Windows 3.

**Parents of Win 3:** Go to the Program Manager, hold down F3 while typing WIN3; release F3 and press the backspace key. A new desktop background will appear, with the email names for the dozens of people that worked in various ways to create, test and market Windows 3.

**W4W fireworks:** Open Word for Windows with an empty document; choose Format, Define Styles, Options; type NORMAL into the Based On field; click on OK. An error message will appear; click on its OK button; click on Cancel; select Help and About Word for Windows; turn Capslock on; hold down the O, P, U and S keys at the same time, then release. Up pops a window with a colourful fireworks display, and a scrolling series of email names for the Word for Windows team.

expanded to show the icons of the various programs in it. Let's imagine that you have many groups, and keep some of them as icons. You use the mouse to arrange them in the Program Manager window in just the right order. You quit Windows, and tell it to save changes. Then, to your surprise, next time you enter Windows, the icons have magically rearranged



# ASSEMBLING QUICKBASIC

## PART 14

Having earlier introduced the use of floating point calculations in assembly language routines, and at the same time declaring them to be of limited use, this month Jeff Richards shows how user-defined types and floating point can be combined for easy and efficient manipulation of complex numbers.

**C**OMPLEX NUMBERS are a prime candidate for a user defined type. A complex number can be expressed as the simple sum of two parts – a real part and an imaginary part. The imaginary part is a real number multiplied by the square root of minus 1. Therefore, complex numbers can be expressed as a set of two real numbers, and a user defined type is a convenient way to do this.

When used as a variable, mathematicians refer to complex numbers in the form  $a+ib$ , where  $i$  is the imaginary unit, or the square root of minus 1. To express a complex number as a user type we could use a type structure such as –

```
TYPE Complex
  R AS DOUBLE 'Real Part
  I AS DOUBLE 'Imaginary Part
END TYPE
```

and then declare the required variables in a DIM statement –

```
DIM C1 AS Complex, C2 AS Complex, C3 AS Complex
```

References to the numbers would then be in the form of  $C1.R$  and  $C1.I$ .

Mathematical operations on complex numbers involve simple operations on each of the parts. For instance, if  $C1$  and  $C2$  are user defined types as described above, then the sum of  $C1$  and  $C2$  can be expressed as –

```
(C1.R + C2.R) + i * (C1.I + C2.I)
```

Therefore, the code to add two complex numbers and put the sum in a third might be –

```
C3.R = C1.R + C2.R
C3.I = C1.I + C2.I
```

And, the product of two complex numbers could be coded as –

```
C3.R = C1.R * C2.R - C1.I * C2.I
C3.I = C1.R * C2.I + C1.I * C2.R
```

The only operation that QuickBasic allows for user defined types is assignment. It is not possible to define the operation of addition or multiplication as it applies to a defined type, so that, for instance, the statement  $C3 = C2 + C1$  would be interpreted in terms of the above formula. The nearest we could get would be to define a function that returns the defined type, so that the statement could become  $C3 = CXADD(C1, C2)$ . In fact, even this is not legal. For reasons that are far from clear, it is not possible to assign a user defined type to a function. The nearest we can get to the above format is a SUB that carries out the operation and returns the result in one of its arguments. The statement becomes –

```
C3 = C1: CXADD C3, C2
```

Not elegant, perhaps, but perfectly functional.

The two routines presented here implement addition and multiplication of complex numbers – subtraction and division would be similar. The arguments to the routines are structures consist-

```
TITLE COMPLEX QuickBASIC 4 Library Routine
DOSSEG
.MODEL MEDIUM
.CODE
```

```
*****
; DECLARE FUNCTION CXADD (C1, C2)
; ADD COMPLEX NUMBER C2 TO C1. C2 AND
; C1 ARE STRUCTURES OF TWO DOUBLE-
; PRECISION FLOATING POINT NUMBERS, AND
; MUST BE PASSED AS A STRUCTURE NAME.
; MUST BE ASSEMBLED WITH THE /E OPTION
; UNLESS 80x87 IS KNOWN TO BE PRESENT.
*****
```

```
PUBLIC CXAdd ;(a + ib) + (c + id) = (a + c) + i (b + d)
CXAdd PROC
    Push    bp
    Mov     bp,sp
    Mov     si,[bp+6]
    Mov     di,[bp+8]
    Fld     QWORD PTR [di]
    Fadd     QWORD PTR [si]
    Fstp     WORD PTR [di]
    Fld     QWORD PTR [di+8]
    Fadd     WORD PTR [si+8]
    Fstp     WORD PTR [di+8]
    Wait
    Pop     bp
    Ret     4
CXAdd ENDP
```

```
PUBLIC CXMul ;(a + ib)(c + id) = (ac - bd) + i(ad + bc)
CXMul PROC
    Push    bp
    Mov     bp,sp
    Mov     si,[bp+6] ;c2
    Mov     di,[bp+8] ;c1
    Fld     QWORD PTR [di] ;c1.r
    Fmul     QWORD PTR [si] ; * c2.r
    Fld     QWORD PTR [di+8] ;c1.i
    Fmul     QWORD PTR [si+8] ; * c2.i
    Fsub     ;(c1.r*c2.r)-(c1.i*c2.i)
    Fld     QWORD PTR [di] ;c1.r
    Fmul     QWORD PTR [si+8] ; * c2.i
    Fld     QWORD PTR [di+8] ;c1.i
    Fmul     QWORD PTR [si] ; * c2.r
    Fadd     ;(c1.r*c2.i)+(c1.i*c2.r)
    Fstp     QWORD PTR [di+8] ;Save in c1.i
    Fstp     QWORD PTR [di] ;Save in c1.r
    Wait
    Pop     bp
    Ret     4 ;And return.
CXMul ENDP

END
```

**Listing 1.** These two routines implement addition and multiplication of complex numbers – subtraction and division would be similar.

## The power in an OOL

COMPLEX NUMBERS provide an excellent example of the power that is available in an Object-Oriented Language. For an OOL, the user defined type is an object and the operator, + for instance, is a message. The message will be interpreted in accordance with the rules that apply to the object, so that the statement equivalent to the QuickBasic code  $C3 = C1 + C2$  would perform the correct operations on  $C1$  and  $C2$ , according to the rules for adding complex numbers. The programmer could write code such as  $C3 = C1 * 1.5$  or  $C3 = C1 / C2$  knowing that the type definitions of the variables or constants, and the rules attached to the operators, would combine to ensure that the correct mathematical manipulations were carried out. QuickBasic is *not* an Object Oriented Language!

ing of two double-precision numbers, representing the real and imaginary parts respectively. The result is returned in the first argument.

The only unusual element is in the multiply routine. The formula is such that the real part of the first argument is used in calculating the imaginary result. To avoid overwriting this figure before it is used, it is kept in the coprocessor stack until the imaginary part has been calculated. Then both results are stored back into the first argument. The real result could have been stored into a temporary memory location, but the coprocessor has more than enough stack space for these simple routines, so it is just as easy to leave the result in the stack until it can be safely returned.

### REM User-defined structures for Complex Numbers

```
TYPE Complex
    R AS DOUBLE
    I AS DOUBLE
END TYPE_ DECLARE SUB CXADD (A AS Complex,
                                B AS Complex)

DIM CX1 AS Complex, CX2 AS Complex

CX1.R = 1.2345678 : CX1.I = 5.43210
CX2.R = 9.8765432 : CX2.I = 3.14159
CXAdd CX1, CX2
```

**Listing 2.** A typical format for the initialisation part of the program.

Registers SI and DI are used as pointers to each of the arguments – they are initialised with the values found at  $BP+6$  and  $BP+8$ , which will be the real part of each argument. Double-precision real numbers are 8 bytes long, so the imaginary part of each argument will be found at  $[SI+8]$  and  $[DI+8]$ .

Using the routine in a QuickBasic program is simple. In order to invoke parameter type checking, the user type should be defined before the SUBs are declared. The variable names should be associated with the user types, in a DIM statement, after the SUB declaration. Listing 2 shows a typical format for the initialisation part of the program. Remember that the parameters to the routines are the user-defined variables; they should be  $CX1$  and  $CX2$ , not  $CX1.r$ ,  $CX1.i$  and so on. □



JOHN  
HEPWORTH

# Dramatic Grammatik

**T**HE FIRST GREAT software tool for writers was the word processor. It was fantastic to be able to pour words into the keyboard, and later massage them into shape. Never again was it necessary to re-key a page just to add a word or remove a typographical error, just make a small change and the job was done.

The next giant step came with the inclusion of spell checkers. They are a boon to typists and keyboard operators of all levels of skill. As a first step in proofing a document they are essential. But spelling checkers only go part of the way. They merely check a document one word at a time against an electronic dictionary. If a word has a legitimate spelling, but is out of context it will be ignored. Likewise, poor punctuation and grammar are also ignored.

There have been several attempts to create programs to check grammar and style used in a document. One of the best known is Grammatik, which has been on the market for nearly ten years. Now its publishers, Reference Software, have released its newest incarnation, Grammatik IV. I looked at the British version with our spelling, grammar and usage rules.

When your document is nearly finished, and a first check has been made with the spelling checker built into your word processor, it is time to call for Grammatik to criticise your work. Grammatik looks through your document and checks it against various rules. As each problem is found, it is displayed. Each time a suggestion is offered or the user is advised to edit the text.

Grammatik can check a document interactively, with each suggestion being shown to the user, and the file being modified as each alteration is made. Other options include marking problems in the file with or without advice. In this case the user makes any corrections after returning to the host word processor. When Grammatik IV has finished checking a document, all sorts of statistics are available. These include the length of paragraphs, sentences and words, and a readability index.

I used Grammatik to check a few docu-

ments that had previously been checked thoroughly, or so I thought. To my surprise, and delight, it found quite a few problems. These started with punctuation errors that I should have found. It found a few places where I had mismatched pairs of singular and plural words. There were also a few times where Grammatik suggested that a phrase be simplified, a sentence was too long or that use of a word was questionable or ambiguous.

I didn't always agree with Grammatik. Sometimes it found what it thought was a problem, but it was exactly what I wanted to say, and it suggested changes that meant something completely different. Even so, it usually accurately identified a problem, and made valuable suggestions. It is now one of the most valuable weapons in my armoury.

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## *Grammatik looks through your document and checks it against various rules.*

---

### Installing Grammatik

GRAMMATIK IV comes with three 5.25- and two 3.5-inch disks. Installation consists of running an install program on the first distribution floppy. This takes care of loading Grammatik onto your hard disk or onto a working floppy, which must be at least a 720K disk. It also modifies the autoexec.bat file so that an environment variable is set each time the system is booted, and a path is set to the directory containing Grammatik. They are used by Grammatik so that it can find its various files when required.

### Running Grammatik

GRAMMATIK CAN be run from the Dos command line, and then operated manually. It can also be invoked from inside many popular word processors. These include Microsoft Word 4.0 and 5.0, WordPerfect 5.0 or 5.1, Professional Write 2.1 or

later, WordStar 5.0 or XyWrite III. A third method of operation uses Grammatik in batch mode to check and annotate several files at a time.

Running Grammatik from inside a word processor is done with a small program called G4RUNWP. By running it from the Dos command line your word processor is loaded, complete with a macro attached to Alt-G. When in a document, pressing Alt-G saves the document to disk, and then shells to Dos and automatically runs Grammatik. At this stage it is possible to select the file to be checked.

Grammatik actually reads and amends a file in its own format. As a result, before Grammatik can read and comment on a document it must convert it from the native format used by your word processor to Grammatik's intermediate file format. When calling Grammatik from inside one of the word processors mentioned above, the conversion is done automatically from native word processor to Grammatik, and back again when the checking process is finished. As well as these word processors, Grammatik can check files created by a host of others, but their files must be manually converted with a utility run from the command line.

Now the main screen appears. At the top are the names of three pull-down menus. These are File, Checking and Preferences. The File menu allows selection of the name of the input and output file, and the loading or saving of a Preferences file. Checking allows the type of checking to be selected, from full interactive to mark-and-continue. The Preferences menu allows setting of various options including the writing style, rule classes, rule dictionaries and word processor. Grammatik can check a document against six writing styles – general, business, technical, fiction, informal or custom. Likewise it offers four rule classes. By selection of the appropriate combination to suit the purpose of the document, it will be checked appropriately.

Pressing B commences a full check, M only marks suggestions and continues, while S gives a statistics report. After converting the document to Grammatik's intermediate file format, and loading it, the



screen divides into two halves. In the top half, Grammatik displays a few lines of text containing the first problem it has identified. In the bottom half it tells the user of the fault it thinks it has found, and a suggested remedy. Grammatik also allows the user to go to the next problem by pressing F10, to directly edit the text by pressing F9, to mark the problem and continue with F8, and to ignore the phrase for the rest of the document by pressing F5. Often it will suggest that a word is inappropriate or commonly confused. Usually it will then offer one or more words as alternatives, and selection of a replacement is easy.

I now find that after I finish writing and checking the spelling of a document I run Grammatik over it. It always finds a couple of problems that I had overlooked, particularly those hard-to-find ones like punctuation and capitalisation problems. It will never replace a human proof-reader, however, for only a human mind can really decide if a piece of text truly says what you want it to say, and has exactly the right mood for your purpose. It is another aid in avoiding errors, and will be valuable to most working writers, executives, and anyone else who must put their thoughts on paper.

Grammatik IV is a product of Reference Software. It is distributed in Australia by Logo, (02) 819 6821.

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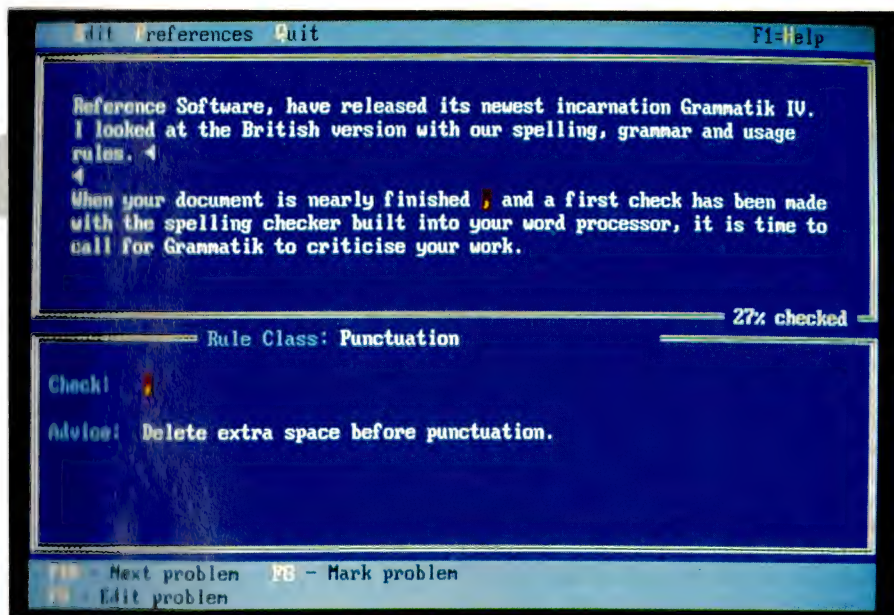
*It is now one of the most valuable weapons in my armoury.*

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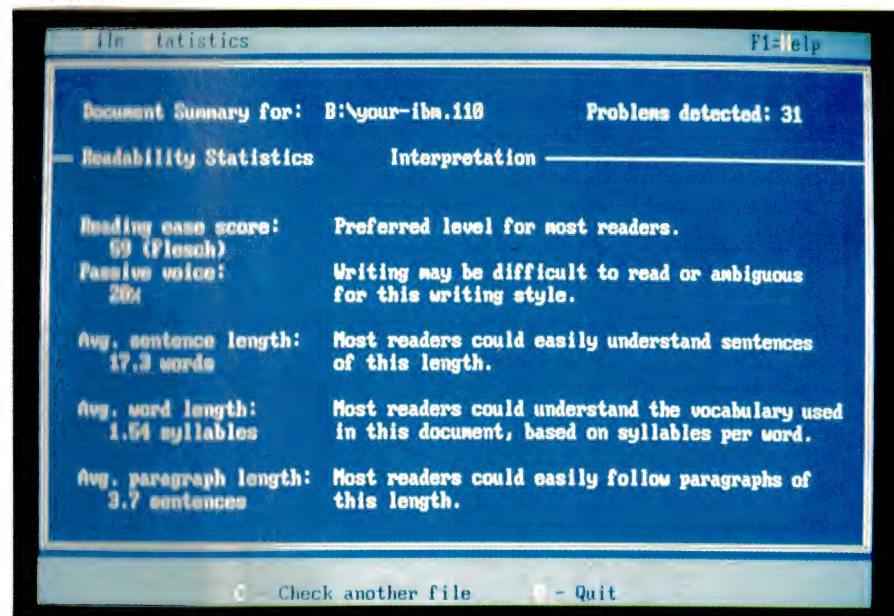
### Thanks Epson

A FEW MONTHS ago I needed a printer in a hurry. The good folks at Epson immediately sent me one of their lovely little LX 850 dot matrix units, and left it with me for a few months. It's a really nice 9-pin printer, with paper parking, separate paths for cut paper and fanfold, and good quality output. In native mode it just uses a single pass of the 9-pin head to give very readable drafts, and in addition it has two letter-quality fonts which are created with two passes of the print head. Speed is good in draft mode, and acceptable for NLQ.

Eventually the time came to give it back. I then bought myself another of the Epson range, the fast 24-pin LQ 850,



After converting the document to Grammatik's intermediate file format, and loading it, the screen divides into two halves. The top half displays a few lines of text containing the fault Grammatik has identified, and the bottom half tells the user of the fault, and a suggested remedy.



When Grammatik IV has finished checking a document, all sorts of statistics are available. These include the length of paragraphs, sentences and words, and a readability index.

which has high speed, a good range of fonts and excellent print quality.

Like all Epson printers, both are nice to use, reliable, and are recognised and properly driven by virtually every software package around.

Choosing a printer is never easy, but Epson at the moment has a little booklet detailing the decisions and trade-offs involved. It is very useful to anyone thinking of buying a printer, and is available by ringing (008) 028 301. □





**JOHN  
BAILEY**

## TurboCash+

THESE ARE dangerous times and there be all sorts of ghosts and ghouls abroad; most of them wanting your money. If they can't get hold of your money then they'll make do with an asset or two. Keeping a firm grip on our finances will probably be the key to survival for many of us and for small businesses in the country there is a good range of software available. One that has been on my desk for awhile now is TurboCash from Pink Software. There are two versions of the product, TurboCash is the straight bookkeeping package and TurboCash Plus includes inventory control as well.

TurboCash is a very well presented package, pink disks in a pink box with a pretty pink book of some 150 pages (which is well written for simple folk like me). The explanations of accounting terms and practices are clear as well as comprehensive. If you use this software it will take awhile to learn the whole system, but your final reports will be presented according to normal accounting practice.

TurboCash is the package recommended by Handisoft as the account management software to complement their own tax preparation software, HandiTax.

*The main difference between TurboCash and TurboCash+ is the inventory and invoicing capabilities of TurboCash+ which are as powerful as most on the market.*

Their reasons for making this recommendation are that the price is right (\$349), the quality of the package, and the way in which it follows standard accounting procedure whilst still allowing for a variety of flexible reports.

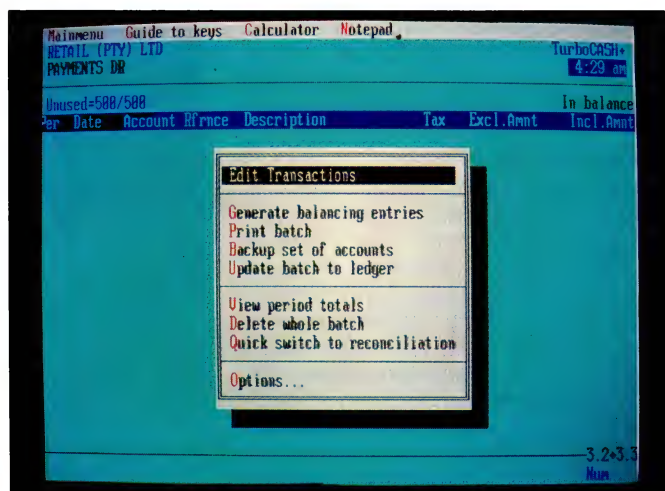
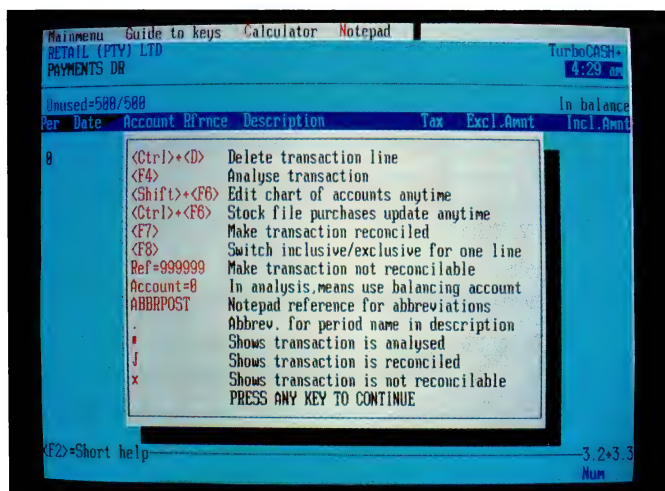
Plain TurboCash has no stock control and invoicing section, and is a straight-out accounting and cash management tool. The program runs on any IBM PC, XT, AT, PS/2 or similar compatible with a hard

disk drive, 512K or more of memory, mono or colour monitor and Dos 3.x. The printer in use must be able to print 132 characters per line. In effect the printer requirement is pretty broad because the program assumes Epson defaults and automatically sends the appropriate Escape code to enable compressed print at the start of report printing.

### Tutorials

I AM PARTICULARLY impressed by the TurboCash tutorials in accounting and using the software. My acquaintance with accounting practices and procedures has been limited to interviews with bankers and my tax agent. The TurboCash accounting tutorial explained assets, liabilities and capital and their relationships in a simple and effective manner so that I now have some understanding of how a set of accounts is presented. Believe me, this is a breakthrough in accounting education.

The tutorials combine using a book and the keyboard, and take users through the process of creating a chart of accounts, entering data and producing reports. Creation of a chart of accounts is the foundation upon which the rest of a bookkeep-



The transaction entry process simply replaces a book with magnetic media and the pen with the keyboard. Tutorials combine using a book and the keyboard, and take users through the process of creating a chart of accounts, entering data and producing reports.

TurboCash is recommended by Handisoft as the account management software to complement their tax preparation software, HandiTax, because the price and quality are right, it follows standard accounting procedure and allows for a variety of flexible reports.

ing system is built. If you have doubts about what to do after studying the tutorial, it is probably worth asking your accountant for some assistance in setting up a chart of accounts. In some cases you may have an accountant who is not computer literate or who is not very much involved with your business so temper your acceptance of the advice with these special conditions in mind.

After creating a chart of accounts with all items having been allocated a category (income, expense, capital, liability, bank, and so on) and an account number, you can begin entering the data that will allow you to monitor your business, present reports based on past experience and make budget forecasts based on that experience.

### Transaction entry

THIS PROCESS is really very easy because the program does not seek to replace normal bookkeeping procedures, but simply replaces a book with magnetic media (floppy and hard disks) and the pen with the keyboard. If that were all, we might question the use of such software, but of course it goes much further. If figures are entered to a normal ledger then totals must be reckoned and transfers made from journal to ledger or final balance sheets, and the amount of repetition is time consuming.

One of the interesting options available with TurboCash is the ability to post entries to a previous year. I have always thought that this sort of thing came under the heading of creative accounting until I was recently asked to do just that for a country business. Their accounting package didn't really allow it, but back-up files from previous years were available so we altered system dates, restored the back-up files and pretended to be at last June. I must say I was still worried about the creative accounting aspect of this procedure, but the firm's accountants pointed out that business is like any organic process and it doesn't pause to allow for a neat break in continuity for the sake of some tax office directive. Because we create a static description of a fluid situation, there must be provision to go back and rectify errors that were made at the time of creating the financial model of our business.

### The report writer section

THIS SECTION OF TurboCash is the part where we can analyse performance of the

business and make predictions of future trends. The range of reports is extensive and can extract information relating to specific accounts, by date, category, invoice or cheque number, and in any combination of these. The report may include all transactions or summarise account totals and the budget report facility allows

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*On performance it claims  
direct competition with  
some of the top  
bookkeeping packages  
available, at a price  
that struggling  
country businesses  
can afford.*

---

us to use last period figures and make adjustments to these on an individual basis or adjust everything such as expenses up by five percent.

The main difference between TurboCash and TurboCash+ is the inventory and invoicing capabilities of TurboCash+ which are as powerful as most on the market. It is no secret that Softcover Software, the distributors of the TurboCash range, have targeted the small business market and with the release of the LAN version of TurboCash+ they see Attache as their direct competitor. TurboCash+ runs 999 sets of accounts, 999 sub-accounts, 52 categories, five sets of cash-books, and the number of stock items and transactions is limited only by disk space. Plain TurboCash has the same capacities without the inventory and invoicing abilities. On performance it claims direct competition with some of the top bookkeeping packages available, at a price that struggling country businesses can afford. I often feel that the price of a package is determined by whether it is delivered by Porsche or post.

The TurboCash range is priced at \$349 for TurboCash, \$495 for single user TurboCash+ and \$1495 for TurboCash+ LAN version and is available from Softcover Software, Suite 202, 19 Berry Street, North Sydney; phone (02) 957 4010 or fax (02) 929 7198. ☐

# BRAIN BRAIN

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GREGG  
FAULKNER

## Amiga upgrades

**T**HIS YEAR my New Year resolutions were easy. I resolved to try very hard not to miss a single month with Your Amiga column. I have, unfortunately, missed a couple of issues during 1990, mainly due to the time required to stay in touch with new developments. Things are changing so quickly in the Amiga world, with new machines, new hardware additions and brilliant new software. My problem is finding enough hours in each day to keep up with it all.

There are a couple of suggestions I would like to offer to others. First I would like to see Commodore resolve to step up the pace of development of the Amiga. More conservative manufacturers like IBM and Apple are catching up fast in areas where the Amiga once had a complete stranglehold. The Amiga 3000 is a step in the right direction, but alone it is not enough.

Serious users, I'm talking about business users here, need 24-bit colour graphics and 16-bit sound, now. The standard Amiga chips are over six years old and desperately need replacing. With the 50MHz 68040 processor just around the corner, the CPU is running away from the co-processors which made the Amiga so stunning five years ago. While you're at it, Commodore, we could do with a high density floppy drive – 1.76Mb would be nice, especially if it is downward compatible with the 880K floppy.

The A590 Hard Drive Plus is a useful add-on. With its provision for 2Mb of RAM it is a doubly attractive buy for serious Amiga 500 users, but for one thing – 20Mb is too small for an Amiga. I would like to see the standard hard drive in the A590 expanded to 40- or 45Mb, that's a much more practical size for the Amiga. The way hard drive prices have dropped in the past 12 months, it should be possi-

ble to include a 45Mb drive for the original \$895 price of the A590.

### Software backup

**THE SECOND SUGGESTION** I would like to offer involves importers and distributors of Amiga software. 1990 has seen a lot of software prices drop to generally reasonable levels by comparison with US prices. What we have yet to see is comprehensive software backup, and by that I mean the provision of low-cost or even free upgrades to original software purchasers.

I have bought a lot of software packages, for both my own use and for my work, and after every purchase I carefully fill out and mail the registration form. So far PageStream, by Soft-Logik, is the only software I have been contacted about for a cheap upgrade. For that reason, as well as the fact that it's a darned good package, I recently bought a copy of PageStream II.

I have still not heard from the publishers or distributors of Professional Page (I bought version 1.1), Deluxe Video, Animagic, MaxiPlan Plus, Deluxe Paint II, Superbase Personal or WordPerfect, despite

sending off registration cards for every one of them. This year I intend to publicly applaud publishers which do provide good follow-up service. I shall also pass on bad experiences related to me by the large number of Amiga users with whom I am in contact.

### Contact

**NOW, WHILE I'M** on the subject of contacts... 'Contact' is the title of a very useful utility package from Australian software author and publisher, Craig Fisher. Fisher's earlier products, Smart Key and Post Code, proved popular with Amiga users and I have enjoyed using them. Contact is another useful and compact program which runs quietly in the background until needed. When called into active use, Contact provides a simple facility for accessing details of personal contacts. Information from the Contact database can be printed on address labels, or individual details can be transferred directly into any other program you may have running. If you have a modem attached to your Amiga, Contact can even dial your phone for you. Fisher has included full

ARexx support in Contact which opens up all sorts of possibilities in linking Contact with word processing, database, spreadsheet or other tasks. A trademark of Fisher's previous programs has been their compact size and their very clean use of the Amiga environment. They have no impact on other programs running and can be used even on systems with minimal memory. Contact is no exception, requiring only 50K of RAM. The user interface is well designed, with standard facilities accessed from menus or by keyboard equivalents. Business, and very wealthy home, users will be pleased to note that Contact supports PostScript printers in addition to the usual Amiga set.



*At \$199, every Amiga owner should have a copy of AmigaVision – it's now being used by professional organisations such as the Sydney Powerhouse museum to give multimedia exhibits, such as this one for brewing beer.*

Interestingly, Contact is distributed by Desktop Utilities of Manuka in the ACT. Frank Keighley, principal of Desktop Utilities has earned my admiration for setting up one of the first Amiga-based publishing bureaus in this country. He has subsequently taken on distributorship for several publishing related, and some totally unrelated, products. Keighley has become something of an authority on scanning and digitising facilities for the Amiga. He provides consultancy services as well as sales and support for scanner hardware and software including Professional Scan Lab, ASDG and Consultron products. I will take this opportunity to congratulate another Amiga retailer providing excellent support for consumers. Interlink Software of Greenway in the ACT, began as a mail order software business a couple of years ago. Interlink opened a shop-front during 1990 and business has boomed.

A major part of Interlink's success can be attributed to principal, Kim Mars' idea of printing a regular products catalogue. This catalogue has become a sought after item. The October 1990 issue ran to 20 pages, and included many extensive software reviews as well as all the news on new releases. Over 1500 items of software and hardware are listed. From a one-man beginning, Interlink has grown to employ a full-time staff of four and a weekend assistant. Kim and co-workers, Jeremy and David, have a wealth of Amiga hardware and software knowledge between them, and they are always happy to help out with assistance and advice.

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*In the computer business  
there's only one recipe  
for success. Provide the  
customer with  
knowledgeable service  
and competitive prices.*

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#### Recommended retailers

I JUDGE A retailer by several criteria. They must have really good knowledge of their products. They must be courteous and helpful. Their prices must be competitive. They must provide effective after-sales support for their products. Interlink have

satisfied my demands on all these issues and I am happy to recommend them. No, I don't own shares in the business. I'm just happy to be able to recommend a store which provides the sort of service I've been demanding for years.

Another store I've heard terrific reports about, although I haven't had the opportunity to deal with them first hand, is The Hard Disk Cafe at Mona Vale. Being born and bred in St. Ives, before I moved to Fat Cat country, Mona Vale is familiar territory and I have fond memories of long sunsets on North Mona Vale beach... ah, but that was a long time ago.

It's great to see Amiga specialist stores thriving. In the computer business there's only one recipe for success. Provide the customer with knowledgeable service and competitive prices. I've made a couple of anonymous telephone enquiries to the Hard Disk Cafe and each time I've been provided with helpful and courteous advice from people who know their products.

Perhaps it is timely to mention the release of version 2 of PageSetter. The original PageSetter was a program which didn't appeal to me at all. I really felt it was a half hearted and rushed attempt to get into the DTP market without enough effort. Happily PageSetter 2 is a completely different story.

The best way I could describe PageSetter 2 is to call it a cut-down version of Professional Page, with all the most useful features left in. The result is a very useful package which can produce professional quality DTP output without the huge price usually attached to business level software.

The Compugraphic fonts included with PageSetter 2 provide accurate WYSIWYG screen display and beautiful output, even on 9 pin dot matrix printers. Anyone who has used Professional Page will feel immediately at home as the PageSetter 2 screen is nearly identical with its big brother's.

At \$179 around the traps, PageSetter 2 is not cheap. For clubs, schools, and anyone who produces newsletters, booklets or posters it is good value, and certainly provides the DTP functions you are going to need most.

I notice that big brother, Professional Page, has dropped to \$299 just as PageStream v2.0 is released at \$395. Strange coincidence I mutters to myself. Having used both programs extensively, let me make my feelings clear by stating that I have just bought PageStream v2.0. I like PageStream's way of doing things and I

feel much less restricted using it than I do using Pro Page. Mind you, a hundred bucks is a hundred bucks.

I jump back and forth between using Ventura v3.0 on an MS-Dos machine (well at least it's made by Commodore, the PC60-III) and PageStream on the Amiga. Yes, I do wash my hands in between. There is absolutely no doubt in my mind that Ventura is the superior package. But so it should be, at well over \$1000.

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*His eyes glaze over and  
he mumbles 'God it's  
fast,' over and over, while  
shaking his head a lot.*

---

Every now and then I find something that really tickles me. Have you ever tried to rotate text by 45 degrees in Ventura? Ha! PageStream can! How about rotating a block of text in all three dimensions? PageStream can do it standing on its ear! But then PageStream can't provide running headers and footers which automatically pick up page numbers, chapter numbers, and section titles.

I guess the only solution is Ventura for the Amiga. Well, come on Commodore, how about it?

#### Ahead

IN THE NEXT month or two I will have a comprehensive review of Amos, written with the help of a mate who is a Basic fanatic. Frankly, I haven't had time to get into Amos myself, but from the enthusiastic blathering I get every time I ask John how he's going with it, I get the impression that it's a winner. His eyes glaze over and he mumbles 'God it's fast,' over and over, while shaking his head a lot.

AmigaVision is also high on my list of priorities for an in-depth review. I've been using AmigaVision extensively for about six months now, and the more I use it, the more I like it. My Amiga training courses have been running from AmigaVision for months and the reception the presentation gets is terrific.

At \$199, every Amiga owner should have a copy of AmigaVision just so you can show the next Mac or PC user who comes visiting what *real* multimedia is all about. See you next month. □



STEWART  
FIST

# Slightly better than the best

**W**RITERS AND journalists are always supposed to declare their biases, so I'm going to declare mine, up-front. I've said it before, and I'll say it again, FileMaker II for the Mac is probably the best program ever written.

It's not the biggest, or the fastest, or the most powerful, or the most innovative nor has it the most features – but it is the best in terms of providing a very functional application that is –

- easy to learn,
- easy to set up and use,
- virtually foolproof in data-entry, and
- comprehensive enough for most small-business database users.

Now Claris has bought out a souped-up version called FileMaker Pro.

My initial reaction to this announcement was that they should have left the old program alone. But after looking through the manuals and having a few days of playing with it on my Mac II, I have to agree with many of the changes. Claris appears to have made a very good program, better.

I must qualify that statement. I don't believe in reviewing a program as complex as a database without a good month or two of real work experience, and I haven't had that yet. So treat this article more in the nature of a *first look*. I have three very large (nearly 1Mb) HyperCard files of a dictionary of hi-tech terms that I maintain regularly, and a very large contacts file that I use hourly, so I'm going to swap these over to FileMaker Pro and see how it all works out. I'll let you know if I find any bugs in a couple of months.

## New offerings

THE MOST OBVIOUS are the layout tools. FileMaker Pro now has many of the features of a good drawing application, and it supports colour. I don't have a colour monitor so this last aspect doesn't much interest me, but it's good to know it's there.

Zoom is one of the nicest of the new layout features. You can zoom up to 400 per cent, or down to 25 per cent to show details of your layout or to grasp the overall effect of the page design. This lets you

position images and fields accurately and aesthetically on the page to the point that it probably could be used to replace Claris' SmartForm Designer (not that it takes much to replace SmartForms).

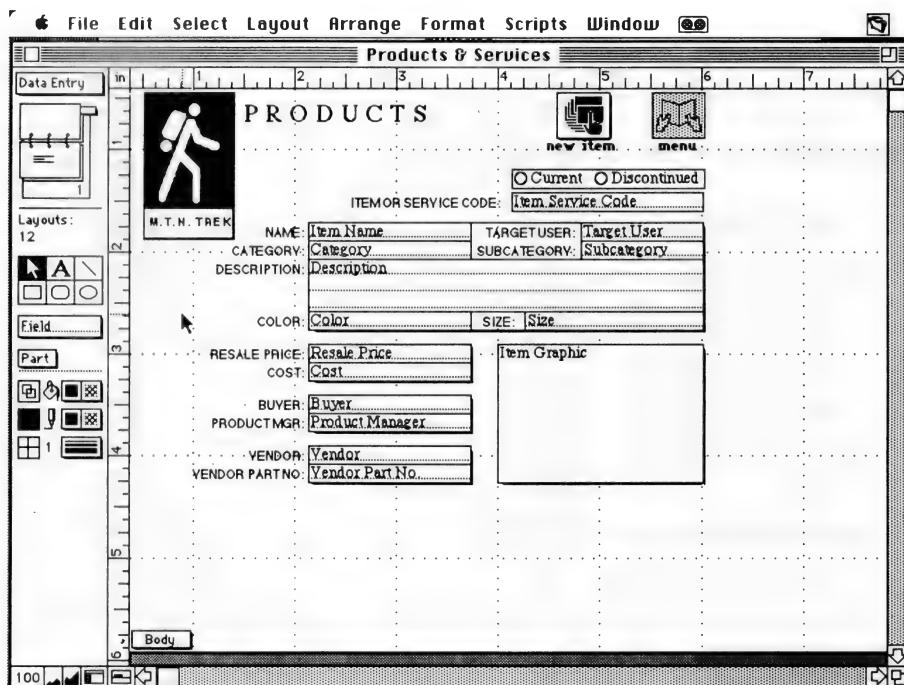
Claris has added user-definable rules, visible grid lines, and a magnetic T-square which helps place elements accurately on the page. At the bottom-left of the layout screen (underneath the 'page' control) they've added a line-width control, a pencil and paint-pot, much like MacDraw. Also stolen from MacDraw is a Size box which gives you, to three decimal places, the *x,y* position, height and width of any selected object in the layout.

There are also six pre-defined layouts which provide you with a starting point before you customise. There's the standard sequential-record format (with header and footer), a columnar (table) report, a single-page form (one record to a page), labels (you can set these to the various standard label-sheet sizes), an envelope

format, and a blank one (for starting from scratch).

You can choose the fields you want to use in each of these report layouts, and establish the field-order through a dialog box very similar to the old DA/Mover. On one side you have all the fields available while the other is empty. You move (copy) the fields progressively across by highlighting and clicking on a move-button, and this process both selects and orders the fields for your new layout.

FileMaker II layout screens were divided into parts (header, footer, and body) but now they've improved this to allow better customisation of reports. The Define Parts dialog box lets you change a part type, or specify page-breaks and page-numbering. There are a range of 'part' types. For instance, at the top of the layout you can insert a Title Header which only appears on the first page. Then you will probably add a normal Header which will appear at the top of subsequent pages, and a Footer for



*FileMaker Pro has user-definable rules, visible grid lines, and a magnetic T-square plus line-width control, a pencil and paint-pot, and a Size box.*

the bottom. If you wish there's also a Title Footer, which also appears only on the first page.

### Summary functions

BETWEEN THESE headers and footers is the main Body of the database with the fields, field names, and any layout elements you've designed. But now you can also have Grand Summaries and any number of Sub-summary parts, either above the Body or below. These are too complex to go into here, but basically they enable you to create page-totals (for instance) at the top or bottom of each page which are not tied in position to the data itself; Sub-summaries are sorted according to a selected field name.

Remember that the Summary functions above are part of the report process and are not an integral part of the data storage – but you can also create summary fields, running total fields, or calculation fields for use within the database itself. This is done by establishing special fields within each record as it was with FileMaker II.

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*Claris has been able to add value to the program without substantially increasing complexity.*

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There is a new Arrange menu, which reflects the emphasis on improved layout functions. As with MacDraw, you can group elements on the layout and manipulate them as a single object, and place objects behind or in front of others.

The Slide Objects command now lets you remove blank spaces in fields (for printing) both horizontally and vertically. You don't need to leave a row of blank spaces between (say) the first name and the last name in a label – the blanks can be removed automatically to allow the two names to be concatenated with a preset gap between. And, if there's no alphabetic characters in (say) a Company Name field, the following Address field will be shifted up during label-printing to remove the vacant line.

HyperCard is making its presence felt in FileMaker Pro also. You can add interactive buttons to your layout by selecting a button graphic from templates or by creating your own. Any object in a layout (except a field) can be designated as a but-

ton, and when you click on that button it will perform a script. Alternately, you can add the script-name to the Script menu and activate it this way.

These are not scripts in the HyperTalk sense, but rather macros. You record a sequence of actions and then automate these through the menu selection or button. A series of these scripts can also be chained together and activated by another button or menu selection.

But a database is only as useful as the accuracy of its data. If incorrect data is accidentally entered or if certain critical fields are left blank, the record can be useless – or even worse, the bad record can be destructive to the file as a whole. So enhancements that help ensure data is correct at the time of entry are always important.

### Field types

THE FIELD TYPES allowed by FileMaker Pro provide the first line of defence against the data-entry problem. We now have Text, Number, Date, Time (12- or 24-hour formats), Picture – and two special non-keyboard entry-types – Calculation and Summary. Time is the only new field-type, but Calculation has been changed to accommodate longer and more complex formulas; there are 22 new calculation functions and, hallelujah, they've even provided a nested 'if' function.

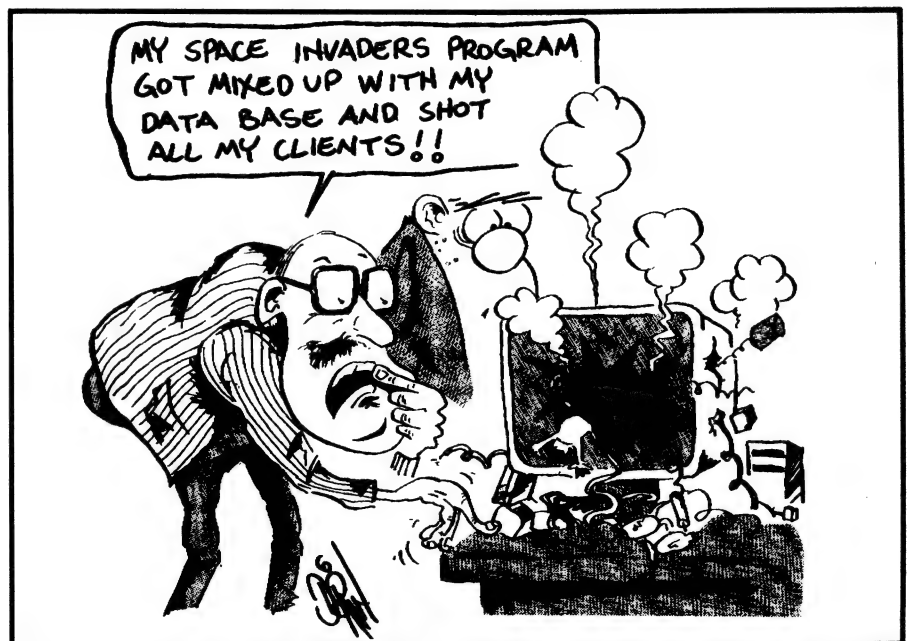
The auto-entry option has been extended to provide entry or modification of the time and the date, and the name of the person who created or changed the

record. You can establish a pre-defined list of fixed values for any field, and you can set the entry process to automatically look up the field-value in another file – and you don't need a shared 'key field' in each of the two files (or rather, the shared fields don't need to have the same field-name). This is not a true relational function, but it is close.

The other major changes in Pro are the provision of a spell-checker, better record sorting, data security through a comprehensive layered series of passwords, and a simplified way of importing and exporting data from other files. They've now included comma-separated text, DBF (dBase III), DIF (spreadsheets) and WKS (Lotus 1-2-3) file-type translators and, on the graphics side, you can import TIFF, PICT and EPS files without using the clipboard.

Overall, the changes seem to me to have been justified, especially as Claris has been able to add value to the program without substantially increasing complexity. Of course, every increase in function means an increase in choice – and that, in itself, increases the complexity of the program – especially for novice users. I hope that Claris doesn't get carried away with the next round of modifications, but at this stage they still have the best easy-to-use database program around.

FileMaker Pro now replaces FileMaker II in the shops and sells at the same RRP of \$475 and, if you want to upgrade your old program, you can do this for \$119 – which isn't unreasonable. □





# FREE READERS' CLASSIFIEDS

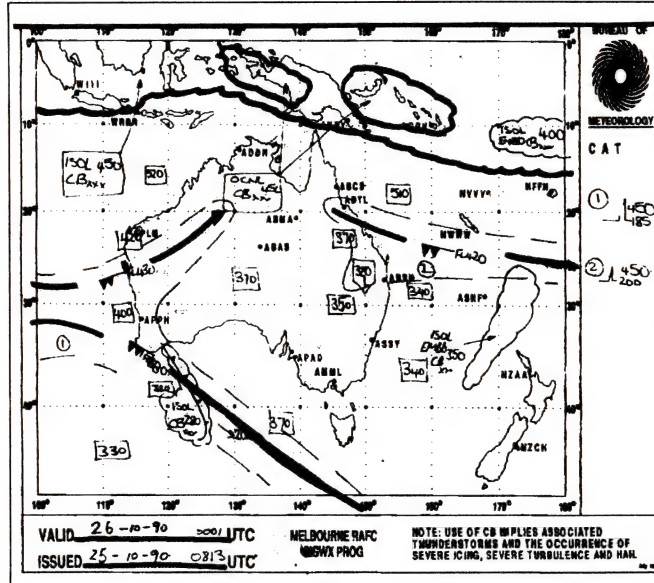
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10 disk set, both old and new testament. Will scan, search, save, print, any text, word or phrase in the entire bible. Excellent study aid! Also available Church Membership System database for members present and past, tithes, mail list, and much more. Bible 5.25-inch - \$39.00 or 3.5-inch - \$49.00. Church System for \$19.00 or \$24.00. David Sutherland, 45 Elstone Avenue, Airport West Vic 3042.



## Weather Fax

Weather Fax programs for IBM XT/ATs. RADFAX2 is a high resolution, shortwave weather fax, morse & RTTY receiving program. Needs CGA, SSBHF radio and RADFAX decoder. Also RF2-HERC, RF2EGA and RF2VGA, same as RADFAX but suitable for Hercules, EGA, & VGA cards respectively. \$35. SATFAX is a NOAA, Meteor and GMS weather satellite picture receiving program. Displays in EGA & VGA modes and needs EGA or VGA colour system, plus Weather Fax PC card. \$45. All programs are on 5.25-inch or 3.5-inch disks (state which) plus documentation, add \$3 postage. *Only* from M Delahunty, 42 Villiers Street, New Farm 4005 Qld, (07) 358 2785.

## IBM IX and Junior software

Shareware and public domain software for IBM IX (and Junior) computers. Suits 128K, 256K RAM and so on. Programs only \$10 each. For a free catalogue write to Microtech Software, PO Box 145, Lilydale 3140 Vic, (03) 735 4821.

## Forth

Part-time work available. Some knowledge of Forth required. Suit

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Save and help preserve environment! Send \$8 for first ribbon, \$15 for two, \$20 for three, plus \$3.50 p&h to PO Box 191, Thornleigh 2120 NSW, (02) 875 2028. Ribbons are returned next day with satisfaction guaranteed!

## Z80 micro-controller

My Australian designed low cost super fast Z80 micro-controller development system has gained

acceptance already with educational institutions. Pop it on the end of any PC MS-Dos or Z80 machines and away you go. Boards, Eprom, and 360K disk \$76, including postage for a short form kit. Gee, I wish I had this when I was a kid. For more information send a 43 cent stamp to Don McKenzie, 29 Ellesmere Crescent, Tullamarine 3043 Vic.

## Appleworks tips and techniques

Ericson for Version 2.0. Ideal for a new user. \$15. Phone Judi, (065) 68 7689. □

**DEALERS,** distributors, mail-order houses and other commercial organisations or individuals who have a message to spread can take advantage of our Market Directory - small ads to help those searching for outlets, services and equipment. For details contact *Your Computer* on (02) 693 6666 or write to PO Box 199, Alexandria 2015 NSW. DISPLAY ADVERTISEMENTS (50mm deep x 60mm wide) in the Market Directory are \$125 per insertion if finished artwork is supplied (Set and Makeup is \$40 extra for the first insertion only). Payment must accompany copy. Closing date is 6 weeks prior to the month of publication.

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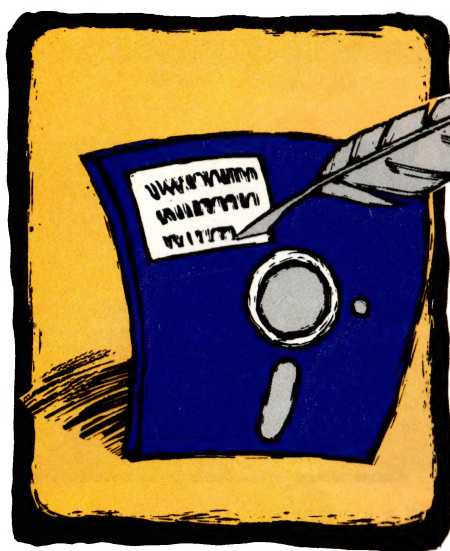
MULTIPLE SCLEROSIS CAN DISRUPT THE SMOOTH FLOW OF MESSAGES

(The smooth flow of messages from the brain)

For more information on Multiple Sclerosis and its symptoms call the Multiple Sclerosis Society in your State.

**MS**





# WRITE BYTES

## YOUR COMPUTER READERS' FORUM

Here's your chance to air your view or gripe about the computer industry, or to ask about a problem you've been unable to solve. And – we always like to hear about what we are doing right and wrong by our readers. Write to: **Write Bytes, Your Computer, PO Box 199, Alexandria 2015 NSW.**

### Too sophisticated

I do not have the resources to buy a laser printer, a '486 with 6Mb of Ram and all the things which go to make up the requirements for the latest and greatest in software and graphics. I do with what I can afford: I have a '286, 1Mb, VGA and a dot matrix; and even so the investment was considerable. I only bought the machine twelve months ago, and already you say the '286 is dead with the minimum requirement now being a '386. Well, for home use the '286 is all I need. It is probably a higher level machine than most home computers, but you seem to always emphasise a higher level of sophistication which is beyond my means.

**L.M. Smith**

*We think it is part of our 'brief' to keep readers informed on the latest developments. We do not say that is what every user should buy today – our recommendation has always been to find the software that does what you want it to do and then match the hardware to it. No one knows better than we do how much of an investment hardware and software represent, particularly since we are obligated to*

*run systems that can handle the latest and greatest (it seems to be a pretty common mistake to assume computer journalists are given all the gear we use: the truth is – at least here at YC – that if we are going to use a product regularly, we pay for it; that's pretty basic to maintaining 'editorial integrity').*

*Our attitude towards the '286 does not mean we think you should throw your machine out: if it's doing what you ask of it, fine. What we are saying is that if you are buying today, it makes sense to at least consider a '386. As the newer technology it will have a longer life and by its nature it offers a more flexible solution which helps to increase that life (and amortise that 'considerable investment' over a longer period). I would imagine that the money you spent on the '286 system 12 months ago would today buy a '386SX system with 2Mb of Ram; that trend is likely to continue and that is why we try to keep readers informed on the 'latest and greatest'.*

### Small users

My son and I run a service business from our home. It's been growing at a good rate and late last year we found that the paper work was starting to eat into the time we spent on jobs. My son has read your magazine since high school, but I have never been interested in computers. Late last year he made me read two articles that changed that. They were 'Buying an entry level PC' [in the September issue] and 'Small business solutions' [in December]. We've got a computer up and running now and it's a real winner in my books: I've even started reading your magazine. But, I get the impression that you think we are all big executives who are looking to buy two million dollars worth of written for small users like us.

**George Katsitakis**

*We're working on more features written especially for users such as your good selves. It's been interesting to note the recent trends in computer use: coming 'down market' is probably the best short description. By that I mean that PCs are rapidly infiltrating everyone's life, not just those at the high-end. Right now the area that is growing the*

*most rapidly encompasses your type of use, up to other businesses that are coming 'down' from an old mini-system with up to eight or so users. One point of those articles which appear to be for 'big executives' is to encourage you to think about future computing needs and to be able to plan for it intelligently. Within a few years, over half the PCs in the world will be networked in one form or another. If your business continues to prosper, you could well want to know more about networking yourself.*

### Printers; bulletin boards

I would like to ask your advice on printers. I'm looking for a quiet, high resolution printer. All I've found are ink jets and laser printers costing at least \$2000, but I can only afford about half that. Any suggestions? Also, in reading your magazine I've met with the expression 'bulletin boards' but there has been no explanation of what they are.

**Rob Harrison**

*Check out 'Portable printers' in this issue. From your letter you don't mention what type of files you want to print. But, since you don't mention colour, I take it that your output would primarily be text or numbers. One of the three I reviewed in that article should suit your purposes and they have the advantage of being small.*

*Computer bulletin boards are an electronic version of the cork and pin ones. The 'bulletin board' is usually a hobbyist's machine that is dedicated to accepting calls over a modem, serving as a collection and distribution point for electronic mail. As you might expect, computer related topics dominate the mail and most of the messages fall into one of two categories: chat and technical. Chat messages are quite informal and range from 'the best game ...' to 'where can I get a used 300Mb drive?' When a particular topic becomes popular, the hobbyist – called the system operator, or sysop for short – will usually organise the discussion so that all of the messages in it are in one place, that is they are not mixed in with messages on other topics. The discussion has then become a conference.*

*Some of those conferences have hundreds of participants scattered all over the world. The messages are passed from one board to another using highly organised international*



# WRITE BYTES

## YOUR COMPUTER READERS' FORUM

networks of these boards which regularly exchange mail via modems (the largest in the world is called FidoNet). (For more on modems and the jargon, see *Modems Part 1* and *Part 2* in our October and December, 1990, issues.) Many commercial organisations maintain their own boards as a means of answering technical enquiries, giving users upgrades and bug fixes quickly, telling about new products and taking complaints.

### Help for students

I teach computer science in a large high school. While my students are a bright and enthusiastic lot – in many cases their 'low-level' knowledge surpasses mine by the end of the year – I find it difficult to keep on coming up with new things that computers are being used for in specific areas. *Your Computer* is the only magazine I've seen that has been at all helpful in that direction. The others all seem to be dedicated to 'this is the only/best computer/software to buy' articles and they do it on almost every product that someone happens to give them. Your 'user' stories take a different approach, and I really appreciate that.

**M. Andersen**

*I agree – it's nice to know about the latest 33MHz '486, but few reviewers ever really do anything useful with all that power other than run benchmarks and exclaim 'gee whiz!' Real life application stories, with particular products mentioned (and whether they worked or not) can do more to help users find solutions to their particular problems than a hundred such reviews. Thanks for your letter and I'm glad your students are finding our articles as useful as our small business readers are.*

### Commercial reality

Thank you for a most interesting magazine; I have found it useful for a number of years now. However, lately there seems to

be a tendency to gloss over some of the nastier aspects of commercial reality. Your correspondent's problems with the second COM port in December's 'Tech Tips' gives an instance of that. I have been in the same situation (and proceeded to fix the problem as Mark described) and decided afterwards to do some investigation. The following relates the results.

I would guess that your card is a one parallel, 'two' serial, one games port card made in Taiwan. This was so in my case and the same for three friends' computers I checked. At least two Melbourne firms import these cards and they are badly documented – one of the firms does not even provide a copy of the 'documentation', which is usually a single leaflet.

Does that matter? Yes! I have read and compared some twenty leaflets supplied with comparable cards at the premises of the local firm which assembled my PC. There was not a leaflet to match my particular card. Another card appeared not to comply with the RS-232C pin-out and the jumper details varied widely. In another instance, the leaflet was for a card that had not been available for some years. In six (I think it was) instances, each leaflet was for a 'typical' card, that is, not necessarily for the card supplied. Only one of the leaflets had the manufacturer's name on it (but no address) – they don't seem to want to be contactable.

I discovered that my original card had a couple of cracked tracks associated with the COM2 ten-pin header. It was no real problem to solder links in, but the point is that the cards without COM2 chips are not even tested for track continuity for COM2.

I eventually got the jumper details for my original card by going to an exhibition, where the card's importer had a stand, and making a scene in front of prospective customers. Most Asian countries do not allow imports of shoddy electronic components. Why does Australia? One day, perhaps, 'deregulation' will be out and consumer protection in again.

'Economic forces' should suffice to see that the buyer of even cheap PC-clones do get two working COM ports, for a mouse

### Missed out?

IF YOU MISSED any of our features, back issues of *Your Computer* are available by sending \$6 (no cash) to us at PO Box 199, Waterloo 2015 NSW. Not all issues are available so please indicate the particular article(s) you are interested in and whether or not photocopies of the article would be acceptable if we cannot supply the magazine.

and a modem. But, market forces cannot be brought to bear unless magazines such as yours publish the nitty-gritty of why these problems arise.

**Geoff Chapman**

*Your letter seems a good start toward solving the problem, although the opportunity to track it backwards and identify the culprits as you have done doesn't always arise. I agree with your sentiments and can only advise as I have always done: when you find dealers who do the right thing, shout about it just as loud and long as when you find those who have done the wrong thing. Vocalising (and talking with your wallet) are probably the strongest weapons a lowly consumer has.*

### Disk subscription

While in Fiji at a company conference, I met a New Zealander who told me about a monthly disk service for PCs that was available there. For a subscription charge you received two disks each month with games, utilities, clip art and other useful bits and pieces on it. I've since lost his address – have you heard of such a service? Is it available here in Australia?

**R. Arnold**

*Your associate was probably referring to PC Disk Downunder. I understand the distributor is offering a similar service now on this side of the Tasman. Contact them at PO Box 469, Mascot 2020 NSW, or PO Box 21-423, Henderson, Auckland, NZ.* □

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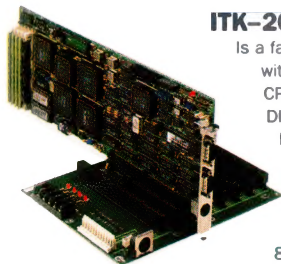
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# Our Solid State Disks will drive your PC like a Porsche.



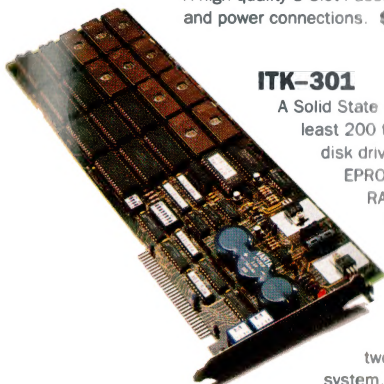
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## ITK-201/8BP

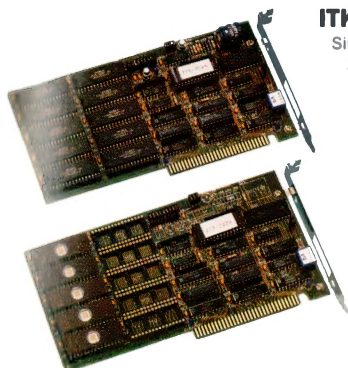
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Single Drive RAM/ROM disks. ITK-302A takes up to 1.2Mb EPROM or 1.2Mb RAM (battery backed). ITK-302B accommodates up to 1.2Mb EPROM. Both boards accept 28 or 32 pin devices and emulate floppy disk drives A, B, C, or D. In 320Kb, 360Kb or 1.2Mb format. Software support provided. Auto Bootable. Fast and small. Ideal for industrial work.

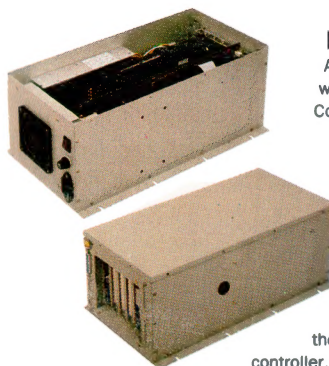
ITK-302A \$207, 302B \$185 ex tax plus memory devices.

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Industrial 19" Rack Mount Chassis with 12 Slot Passive Backplane (2XT, 10AT). Supports 3 half height drives and has a 200 Watt PSU with selectable 110/220 VAC operation. An internal 125CFM filtered cooling fan provides cooling air across the plug in boards. Front and rear keyboard connectors with an easy access disk drive door. The unit is suited for System Integrators and end users requiring a rugged EIA 19" rack assembly. \$1,900 ex tax.



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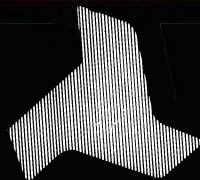
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